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REDFERN LAKE AREA
BRITISH COLUMBIA
N.T.S.: 94-G-5

REPORT ON GEOLOGICAL SURVEY

by

Egg, Damn, Foo
Rolands A. Benkis
R.C. Hart

for 94G/5W

RIO TINTO CANADIAN EXPLORATION LIMITED

CLAIMS

Egg	1,3,5	63362, 63364, 63366
Damn	1-6 incl.	64249-64254 incl.
Foo	8,10,12,13, and 17-22 incl.	63344, 63346,63348,63349 63353-63358 incl.

OWNER

Vestor Explorations Ltd.
1502-11111-87th Avenue
Edmonton, Alberta
T6G 0X9

LOCATION

240 miles N.N.W. of Prince George, B.C.
4 miles N.E. of Redfern Lake
Laird Mining Division
Lat. 57°23'N. Long. 123°50'W.

DATES

June 13, 1973 to June 26, 1973

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Toronto, Ontario
August 2, 1973

Rolands A. Benkis
R. C. Hart

PLATE 1 Aerial view of Redfern Lake (looking west).

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SUMMARY

During the month of June, 1973, a geological reconnaissance program was carried out over certain claims located north of Redfern Lake in northeastern British Columbia. The area investigated was known to have geochemical lead and zinc soil anomalies in areas underlain by limestones of the Devonian Dunedin formation. Geological observations have offered no explanation for the possible cause of the anomalies. Preliminary results from an I.P. survey, which commenced simultaneously with the geological reconnaissance, indicate conductive horizons in the anomalous areas. Pending a further evaluation of the geophysical results, a drilling program is recommended to test the anomalous areas at depth.

ACKNOWLEDGEMENTS

The help and assistance of Owen Cullingham, who is largely responsible for the chapter on geology in this report, is acknowledged. Armile Labelle of Spanish, Ontario, in his capacity as the cook, did more than his fair share to further the program. The co-operation during our stay in the Redfern Lake area of the geophysical crew of Rio Tinto Canadian Exploration Limited, led by Don Sexsmith, is appreciated.

INTRODUCTION

General Statement

During the second half of 1972, Rio Tinto Canadian Exploration Limited entered negotiations with Vestor Explorations Ltd. of Edmonton, Alberta regarding an option to certain mineral claims which Vestor Explorations had staked in northeastern British Columbia; the agreement was concluded during January of 1973. Subsequently the original property was expanded through staking of additional claims to the north and south of the original block.

During the field season of 1972, Vestor Explorations Ltd., had carried out a geochemical soil sampling program over portions of the property. The results indicated the presence of strong zinc and lead anomalies in some of the sampled areas. During June and July of 1973, Rio Tinto Canadian Exploration Limited completed I.P. and magnetometer, and reconnaissance geological surveys of the anomalous areas; the present report resulted from the geological aspects of these surveys.

Property

The original option comprised 107 claims near Redfern Lake in Laird Mining Division, which had been recorded on July 14, 1972 and were grouped as follows:

Damn	1 to 20
Foo	1 to 25
Egg	1 to 22
Chilly	1 to 36
Vista	1 to 4

On February 22, 1973, Tyr 1 to 43 claims were recorded; these claims had been staked to adjoin the original group to the south. On May 10, 1973, Fez 1 to 41 claims were recorded to the north and northwest of the original staking (see map C-3421).

Location and Access

The claims are near and to the north of Redfern Lake in northeastern British Columbia. Geographically the area investigated lies at approximately:

57° 22' North Latitude
123° 50' West Longitude
N.T.S.: 94-G-5

Redfern Lake lies approximately 40 miles west of the Alaska Highway and is accessible during the winter months over a winter road along the Sikanni Chief River, Trimble Creek and Besa River valleys. During the rest of the year the most convenient access to the area is by air from Mackenzie, Fort St. John or Fort Nelson, which are 120 miles south, 135 miles southeast and 100 miles northeast of Redfern Lake, respectively. Redfern Lake is suitable for landing of float-equipped fixed wing aircraft (Plate 2), and charter airline companies maintain bases at the above locations; helicopters are also available for charter at these locations.

Topography

The Redfern Lake area is situated within the Rocky Mountains, which in this area trend NNW. A number of eastwards flowing rivers cut through the mountains and in most instances,

appear to follow glaciated, U-shaped valleys. Redfern Lake fills one of these valleys (Plate 1) and is both, supplied with water and drained, by Besa River, which originates from the glaciers west of the lake and is part of the tributary system of the Mackenzie River.

The lake is at an elevation of approximately 4,150 feet above sea level; the geochemically anomalous areas are approximately 2,000 feet higher on a plateau immediately north of Redfern Lake (Plate 3). Snow covered peaks and crests of the Rockies west of the plateau, rising to elevations in excess of 9,000 feet above sea level, form a magnificent background for the area. The lower slopes of the valleys are generally heavily forested; the tree line lies at approximately the 5,000-foot elevation, and above it the slopes are, for the most part, scree covered (Plates 4 and 7).

The plateau lies in the arctic and subarctic climatic zones and therefore weather is an important factor, even during summer operations (Plate 8).

Previous Exploration

The recent discoveries of lead and zinc mineralization in Devonian carbonates near Robb Lake, some 30 miles south of Redfern Lake, have focused attention to Devonian areas elsewhere, including Redfern Lake. Prior to the recent burst of activity, the area around Redfern Lake had seen relatively little exploration.

In the past, only oil companies had shown an interest in this area, which is evident from seismic trails and winter roads

reaching Redfern Lake. During July of 1962, S. S. Cosburn and D. M. Callan, on behalf of Petroleum and Natural Gas Branch of B.C. Department of Mines and Petroleum Resources, investigated an area of 6 square, miles west of the plateau above Redfern Lake. E. W. Johnson and W. J. Hennessey visited Redfern Lake area during the summer of 1972, as a part of Rio's reconnaissance of Devonian carbonates in northeastern British Columbia. During the summer of 1972, Vestor Explorations Ltd. completed a geochemical survey of certain areas of the plateau above Redfern Lake. Three hundred and thirty samples were collected and analysed for their zinc content; the lead content of 144 samples was also determined. The Redfern Lake area has also been mapped by G. C. Taylor of the Geological Survey of Canada, but the results of this work are not yet published.

FIELD WORK

The geological phase of the 1973 field program at Redfern Lake was carried out during the period of June 13 to June 26. In preparation for the coming field season, materials for camp, such as lumber, plywood, fuel etc. had been flown in from an air strip at Pink Mountain on the Alaska Highway; on June 13, a party of eight, which included a geophysical crew of 5, two geologists and a cook, were flown to Redfern Lake from Mackenzie in a float plane belonging to Northern Thunderbird Air Ltd. A helicopter, Bell Jet Ranger, chartered from Northern Mountain Airlines Ltd. was used to

ferry the men, supplies and equipment to a camp site (Plate 2), located in a stream gully along the east side of the Redfern plateau, approximately 1,000 feet above the lake.

The geology was done along traverses across the plateau, and up and down and along its steeply dipping flanks. After the geophysical crew had established a survey grid over the geochemically anomalous area in the southern portion of the plateau, the geological information in this area was tied in with the grid stations. Outcrop in the area is sparse; the steeper flanks are under talus, whereas the plateau and gentler slopes are covered by scree. The paucity of outcrop is reflected on maps G-4432-1 and G-4432-2. Three stratigraphical sections were measured, two of which include considerable covered intervals (see Drawing G-3423). Twenty-six rock samples were collected from outcrops and floats for lead and zinc analyses.

Prior to the commencement of the field work, on May 16th, a one-day reconnaissance of the area was made by M. B. Mehrtens, W. J. Hennessey and R. A. Benkis. Approximately 25 soil and rock samples were collected during this visit; a number of the soil samples were taken from locations to coincide with the samples gathered by Vestor Explorations Ltd. during the previous field season.

GEOLOGY

General Geology

The property occupies a plateau in the Rocky Mountain

Thrust Belt where Palaeozoic rocks have been brought to the surface by major thrusting and folding during the Laramide orogeny. The rocks underlying the plateau for the most part consist of Middle Devonian limestones of the Dunedin formation. These are thought to be stratigraphically equivalent to the Pine Point formation deposited during Givetian time when extensive limestone sheets blanketed the area. To the north and west, these limestones grade into shale and it is in the vicinity of this facies change where stromatopoioid reefs were developed, some of which have been recrystallized to vuggy dolomite and locally contain galena and sphalerite.

The rocks underlying the plateau are essentially flat-lying to gently dipping,increasing in dip towards the eastern and western flanks of the plateau. The strike of the strata varies but is generally in northwest-southeast through north to a north-east-southwest direction. Structural lineaments in the area trend slightly west of north.

The steeply dipping flanks of the plateau provide fair exposure although in part inaccessible because of vertical or near vertical cliff faces. On the plateau itself, outcrop is scattered and where encountered, if often rubbly.

Stratigraphy

The project area is underlain for the most part by Middle Devonian limestones of the Dunedin formation. The overlying black shales of the Besa River formation, also Middle Devonian,

outcrop to the north and east. Dolomites of the Stone formation underlie the limestones and outcrop to the southwest of the property, low on the steep flank of the plateau overlooking the Besa River Valley.

Table of Formations

PERIOD		FORMATION	LITHOLOGY	THICKNESS (REDFERN AREA)
Devonian	Late	Besa River	Shale	1,000' ±
	Middle	Dunedin	Microcrystalline and fossiliferous limestone, minor limestone breccia.	1,000' ±
		Stone	Dolomite, dolomite breccia.	600' ±

Stone Formation

The Stone formation is a sequence of aphanitic to crystalline, light grey-buff weathering, medium grey dolomite, and dolomite breccia. The breccia horizons are interbedded with the dolomite, and consist of angular dolomitic fragments up to six inches long set in dolomitic matrix.

Dunedin Formation

In this area, the Dunedin formation consists mainly of light grey weathering, medium to medium dark grey microcrystalline limestones. They are often fossiliferous, containing abundant Amphipora and brachiopod shell fragments; however, recrystalliza-

tion has effectively destroyed detailed structure of the fossils making identification difficult. Other fossils identified, Favosites and stromatoporoids, were found locally developed, but no definite reefal structures were identified. The limestones are dolomitic and argillaceous in part. A few zones of iron stained vugs were encountered, some containing pyrite. The limestones occur in beds thinly to massively bedded with few narrow zones of breccia. Several barite veins were found, the largest of which was measured to be 14 feet wide; it outcrops low on the eastern side of the plateau, close to the faulted contact between Dunedin and Bessa River formations.

Besa River Formation

The Besa River formation, where encountered, consisted of buff to medium grey-brown weathering, dark grey shale. It is laminated to thinly bedded and often exhibits banding caused by iron staining of a coarser silt fraction. It is generally slightly calcareous.

Structural Geology

The structure of the Redfern Plateau appears to be relatively simple. Major thrust faults are present along the eastern and western sides of the plateau and the area in between the disturbances is underlain by gently undulating Dunedin strata. The crest of a gentle, NNW-striking anticline is exposed on the base line at 32+00W on thesouthern survey grid. Along the eastern side of the plateau, approaching the fault which has overthrust Dunedin

limestones over the Besa River shales, the structural dips steepen and approach the vertical (Plate 5). The trace of the western thrust, which has moved Silurian and early Devonian rocks over the Dunedin limestones, follows the crest of the high ridge along the western side of the plateau. Minor folding and faulting is likely to be present on the plateau, but because of the lack of outcrop, has not been recognized at the present time.

Mineralization

The only positively identified mineralization encountered was found in steeply dipping strata in a gulch bank on the east flank of the plateau, near the faulted contact between the Dunedin and Besa River formations; the location of the occurrence is approximately on line 0 at 38+00S. The mineralization consists of galena partly replacing a local build-up of stromatoporoid. The showing occurs across a thickness of 3 inches.

DISCUSSION

The objective of the geological survey in the Redfern Lake area was to find a geological explanation for the geochemical zinc and lead soil anomalies. Although small concentrations of pyrite appear to be quite common in the limestones, with the exception of a 3 inch horizon near the eastern extremity of the Dunedin formation, which contained small cavities filled with patchy galena, no other mineralization was encountered. Twenty-six rock samples were collected from likely and unlikely looking out-

crops and floats, and were assayed for their lead and zinc content (see Appendix II). The aforementioned 3 inch mineralized horizon assayed 1.80% Pb and 0.0007% Zn (Lab No. G-1022, Appendix II); the values for the remaining 25 samples ranged from 0.0007% to 0.0129% Zn and 0.0004% to 0.0170% Pb. Futhermore, no reefal facies with good porosity, either in outcrop or float, were found.

Preliminary geophysical results, which were available at the time of this writing, indicate a reasonably good correlation between geochemical and geophysical anomalies. A likely explanation for the lack of visual evidence of the cause of these anomalies is that the horizon responsible for the anomalous conditions is capped by barren limestone and thus is going undetected on the surface. Support to this possibility comes from the fact that the anomalies occur at an angle to the formational strike and on topographical slopes.

The three stratigraphical sections which were measured also failed to disclose mineralization. A likely interpretation is that mapped sections lie below the anomalous horizon in the Dunedin formation. A tentative correlation of the sections is presented in Drawing G-3423.

A number of soil samples which were collected by M. B. Mehrtens during the visit to the Redfern Lake area on May 16th, confirmed the presence of the geochemical anomalies in the area of the southern grid.

RECOMMENDATIONS

From our geological observations in the area this summer, it is difficult to recommend additional work for the Redfern Plateau. However, the geochemical anomalies appear real and preliminary results from the geophysical surveys indicate conductive horizons which, more or less, coincide with the anomalies. Therefore, pending a further evaluation of the geophysical data, limited diamond drilling should be considered to probe the anomalous areas at depth.

Rolands Benkis

Toronto, Ontario
August 2, 1973

Rolands A. Benkis

GEOLOGICAL ASSOCIATION OF CANADA
R. A. BENKIS
FELLOW

R C Hart

R. C. Hart

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. C. HART

Expiry Date: Mar. 31, 1974

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APPENDIX I

SECTION I

Measured in a stream gulch above the eastern end of Redfern Lake, at approximately 57° 21.75 N., 123° 50' W. The Stone/Dunedin contact and the lower Dunedin is covered in this area, masking approximately 250 feet of strata.

UNIT	DESCRIPTION	UNIT THICKNESS (feet)	THICKNESS FROM BASE OF SECTION (feet)
59	Argillaceous Microcrystalline Limestone-medium light grey weathering; medium dark grey; slightly silty, thin to medium bedded.	8	298.5
58	Microcrystalline Limestone-light brown grey weathering; medium grey; slightly dolomitic; recrystallized; approximately 15% sparry calcite; trace of brachiopod shells on weathered surface, but masked on fresh surface. Nine-inch breccia zone 2' above base of unit, overlain by 1' of fissile argillaceous and silty limestone.	16	290.5
57	Covered Interval.	7	274.5
56	Microcrystalline Limestone to Diomicrite-light brown grey weathering; medium grey; dolomitic; up to 40% sparry calcite infilling birds eye vugs and fissures; trace of shell fragments on weathered surface.	6.5	267.5

55	Microcrystalline Limestone similar to unit 56, but with up to 20% sparry calcite.	7.5	261
54	Microcrystalline Limestone-medium dark grey; massive; brachiopod shells outlined on weathered surface.	2.5	253.5
53	Argillaceous Microcrystalline Limestone-light grey weathering; dark grey, in part granular in appearance; traces of fossil fragments on weathered surface.	6	251
52	Argillaceous, Silty Limestone-medium grey weathering; dark grey; fissile to thin bedded; brittle.	2	245
51	Argillaceous, Silty Limestone similar to Unit 52, but with a greater calcite fraction.	1	243
50	Microcrystalline Limestone-medium light grey weathering; medium dark grey; in part granular in texture, slightly argillaceous, few broken shell fragments.	4	242
49	Covered Interval.	3	238
48	Argillaceous Silty Limestone-dark grey laminated; brittle.		
47	Microcrystalline Limestone-medium grey; approximately 10-15% sparry calcite infilling birds eye vugs and fissures, trace of brachiopod shells.	5	231
46	Covered Interval.	6	226

45	Biosparudite-medium grey; approximately 50% sparry calcite; 20-25% fossil content (mostly brachiopod shells); slightly dolomitized.	2	220
44	Covered Interval.	5	218
43	Microcrystalline Limestone-medium grey; slightly dolomitic; in part granular in appearance; traces of fossils on weathered surface; up to 30% sparry calcite.	2	213
42	Microcrystalline Limestone-medium light grey weathering; medium dark grey; 25% sparry calcite infilling birds eye vugs and fissures; 10% fossil content.	7	211
41	Microcrystalline Limestone-as above with a lower sparry calcite content.	7	204
40	Microcrystalline Limestone-light grey weathering; medium light grey; dolomitic; patches and birds eye vugs of sparry calcite.	8	197
39	Microcrystalline Limestone-as above but possibly more dolomitic, greyish brown tint.	3.5	189
38	Microcrystalline Limestone-similar to Unit 40.	9.5	185.5

37	Microcrystalline Limestone-light grey weathering, medium grey; sparry calcite infilling vugs and fissures; trace of fossil remnants (brachiopods); dolomitic.	22	176
36	Biomicrudite-light grey weathering; dark grey; some sparry calcite infilling birds eye vugs and fissures; very slightly dolomitic fossiliferous with zones of Amphipora and brachiopod shell fragments; fossils are masked on fresh surface due to recrystallization.	11	154
35	Covered Interval.	7	143
34	Biomicrudite-medium light grey weathering;dark grey; approximately 20% sparry calcite infilling vugs; very fossiliferous, with Amphipora and brachiopods predominating; recrystallized in part, masking fossils on fresh surface.	26	136
33	Biomicrudite-medium light grey weathering;medium grey; microcrystalline; sparry calcite infills vugs and fractures; some vug fillings show traces of iron stained pyrite; fossiliferous with zones of brachiopods and Amphipora.	22.5	110
32	Microcrystalline Limestone-light grey weathering; medium brownish grey; dolomitic; some sparry calcite infilling vugs and fissures; some vugs show limonitic staining.	2	87.5

31	Biomicrudite-medium to medium light grey weathering; medium dark grey; microcrystalline with some sparry calcite infilling small vugs and fissures; rich zones of Amphipora and brachiopod remnants.	10	85.5
30	Microcrystalline Dolomitic Limestone light grey weathering; medium grey; hard; some sparry calcite infilling vugs; thin to medium bedded; slightly silty; laminated argillaceous limestone ½ foot from top of unit.	4	75.5
29	Argillaceous Limestone-light grey weathering; medium dark grey; laminated to thinly bedded silty; some sparry calcite patches and veinlets.	1	71.5
28	Microcrystalline Limestone-light grey weathering; medium grey; fossiliferous, slightly dolomitic.	3	70.5
27	Microcrystalline Limestone-light grey weathering; dolomitic; trace of brachiopod shell fragments; approximately 30% sparry calcite.	4.5	67.5
26	Microcrystalline Limestone-medium light grey weathering; medium dark grey; encrusted laminated appearance, in part argillaceous; recrystallized, masking detailed structure; algal mat.	.5	63
25	Microcrystalline Limestone-medium grey weathering; medium grey; small veinlets and birds eye vugs of sparry calcite; medium to thickly bedded.	7	62.5
24	Argillaceous, Silty Limestone-medium light grey weathering; medium dark grey; laminated; brittle.	.5	55.5

23	Microcrystalline Limestone-medium light grey weathering; medium grey; in part granular in texture; some sparry calcite infilling of birds eye vugs and fissures; vague outline of fossils; mostly brachiopod shell fragments.	7.5	55
22	Fossiliferous Microcrystalline Limestone-light grey weathering; dark grey; massive; birds eye vugs and veinlets of sparry calcite; few fossil fragments; near base of unit vugs are iron stained.	14	47.5
21	Microcrystalline Limestone-medium light grey weathering; medium grey dolomitic; patches of sparry calcite; massive; 1 foot section at base of unit brecciated, with sparry calcite, in part iron stained around fragments.	3.5	33.5
20	Fossiliferous Microcrystalline Limestone-medium light grey weathering; medium dark grey; granular appearance in part; some sparry calcite infilling birds eye vugs; brachiopod shell fragments outlined on weathered surface.	7.5	30
19	Biomicrudite-light grey weathering; medium dark grey; slightly dolomitic; fossils abound on weathered surface but masked on fresh, mostly Amphipora and brachiopod shells.	2	22.5
18	Microcrystalline Limestone-medium light grey weathering; mottled surface; medium dark grey, some 10% sparry calcite infilling birds eye vugs; in part granular in texture; slightly argillaceous.	1	20.5

17	Biomicrudite-similar to unit 19 but with a greater concentration of fossils.	2	19.5
16	Microcrystalline Limestone-similar to unit 18.	2	17.5
15	Biomicrudite-light grey weathering; medium grey; thin to medium bedded; microcrystalline; some sparry calcite in birds eye vugs; few calcite veinlets; Amphipora rich zones, brachiopod shell fragments; fossils evident on weathered surface but, masked on fresh surface.	4	15.5
14	Fossiliferous Microcrystalline Limestone-6 light grey weathering; medium grey; in part granular in appearance; some sparry calcite veinlets and birds eye vugs; patches of brachiopod shell fragments.	6	11.5
13	Microcrystalline Limestone-light grey weathering; medium brownish grey; dolomitic; high portion of sparry calcite in patches and infilling birds eye vugs.	5.5	5.5

SECTION II

Located on eastern flank of plateau at approximately 57°21.75'N and 123°48.5'W. The section is on a slope with intermittent outcrop and covered interval. The beds are thin to massively bedded.

UNIT	DESCRIPTION	UNIT THICKNESS (feet)	THICKNESS FROM BASE OF SECTION (feet)
116	Poorly Washed Biosparudite-mottled medium grey weathering; medium grey; very fossiliferous; micrite and sparite in equal quantities; mostly brachiopod fragments; in part recrystallized.	2	290
115	Covered Interval	5	288
114	Fossiliferous Microcrystalline Limestone-medium light grey weathering; medium dark grey; argillaceous; Amphipora zone at top of unit; some sparry calcite patches and infilling birds eye vugs; thin to thick bedded.	6	283
113	Covered Interval	5	277
112	Biomicrudite-medium light grey weathering; medium dark grey; medium to massive bedded; fossiliferous; fossils well outlined on weathered surface, masked on fresh due to recrystallization; Amphipora most pronounced with few brachiopod fragments; in part granular in texture; high percentage of sparry calcite.	4.5	272

111	Covered Interval	1.5	267.5
110	Biomicrudite-medium light grey weathering; medium dark grey; high percentage of sparry calcite infilling; 30% fossil fragments; fossils masked on fresh surface.	3	266
109	Covered Interval.	5	263
108	Fossiliferous Argillaceous Microcrystalline Limestone-medium light grey weathering; dark grey; laminated to thin bedded; some brachiopod fragments.	1	258
107	Covered Interval.	5	257
106	Biomicrudite-medium light grey weathering; medium grey; thin to thick bedded; sparry calcite infilling birds eye vugs; narrow zones rich in Amphipora fossils.	3	252
105	Covered Interval	4	249
104	Biomicrudite-light grey weathering; medium brownish grey; microcrystalline; thin to thick bedded; approximately 30% sparry calcite in birds eye vugs and fissures. approximately 20% fossil content.	5	245
103	Covered Interval	2.5	240
102	Microcrystalline Limestone-light grey weathering; medium brown grey; slightly dolomitic; 15-20% sparry calcite; thinly bedded; silty.	1	237.5
101	Covered Interval.	7.5	236.5
100	Biomicrudite-medium light grey weathering; medium dark grey; 20% sparry calcite infilling birds eye vugs and fissures;	9	229

	medium to thick bedded; fossil content increases upward to 70% at top; predominantly Amphipora with brachiopod fragments; fossils masked on fresh surface due to recrystallization.		
99	Argillaceous Fossiliferous Microcrystalline Limestone-light grey weathering; dark grey; up to 30% sparry calcite in veinlets and fissures; few shell fragments.	2	220
98	Covered Interval.	2.5	218
97	Microcrystalline Limestone-light grey weathering; medium dark grey; slightly argillaceous; approximately 10% sparry calcite infilling fissures and birds eye vugs.	4	215.5
96	Covered Interval.	3	211.5
95	Biomicrudite-light grey weathering; mottled appearance; approximately 20% sparry calcite; Amphipora predominate; fossils outlined on weathered surface; some shell fragments, mostly brachiopods; fossil content exceeds 50%.	4	208.5
94	Argillaceous Microcrystalline Limestone-mottled medium light brown grey weathering; dark grey; approximately 5% sparry calcite; laminated to medium bedded.	4	204.5
93	Covered Interval.	2	200.5
92	Poorly Washed Biosparudite; medium light grey weathering; medium grey; approximately 30% fossil content; brachiopod fragments and Amphipora; approximately 50% sparry calcite infilling of vugs and fissures.	3	198.5

91	Biosparite-medium light grey weathering; medium grey; Amphipora rich zone; high percentage sparry calcite; recrystallized.	1	195.5
90	Covered Interval.	1	194.5
89	Microcrystalline Limestone-medium light brown grey weathering; medium dark grey; thin to medium bedded; in part granular texture; approximately 15% sparry calcite in birds eye vugs and fissures.	2	193.5
88	Biomicrudite-medium light grey weathering; medium to medium dark grey; medium to thick bedded; fossiliferous, with thin zones of up to 70% Amphipora; some brachiopod fragment zones; up to 20% sparry calcite.	14	191.5
87	Covered Interval.	12.5	177.5
86	Biomicrudite-medium light grey weathering; medium dark grey; fossils evident on weathered surface, but masked on fresh; Amphipora most common, with brachiopod fragments; up to 30% sparry calcite.	3	165
85	Microcrystalline Limestone-light grey weathering; medium grey; slightly dolomitic; sparry calcite infilling birds eye vugs and fissures.	9	162
84	Covered Interval.	15	153
83	Microcrystalline Limestone-light grey weathering; medium brown grey; silty; dolomitic; approximately 15% sparry calcite infillings of vugs and fissures.	2	138
82	Covered Interval.	3	136

81	Fossiliferous Microcrystalline Limestone-light grey weathering; medium grey; abundant sparry calcite infilling vugs and fissures; some fossil fragments.	3	133
80	Covered Interval.	11	130
79	Microcrystalline Limestone-medium light grey weathering; medium dark grey; in part granular texture; approximately 20% sparry calcite in birds eye vugs and fissures.	5	119
78	Covered Interval.	1	114
77	Biosparudite-light grey weathering; medium grey; 30-40% sparry calcite; evidence of encrusting stromatos-poroids on weathered surface; some Amphipora.	5	113
76	Covered Interval.	2.5	108
75	Biomicrudite-medium grey weather-ing; medium grey; thin to thick bedded; approximately 30% fossil content; mostly Amphipora and brachiopod fragments; masked on fresh surface; up to 30% sparry calcite, decreasing upwards.	4	105.5
74	Covered Interval.	36.5	101.5
73	Biomicrudite-light grey weathering; medium grey; rubble outcrop; abundant fossils; abundant stromotoporoids, with syringopora, favosites and few brachiopod fragments; fossils give ghost outlines in fresh surfaces; 25-30% sparry calcite.	6	65
72	Covered Interval.	9	59

71	Biomicrudite to Biolithite-medium mottled and medium light grey weathering; medium grey; abundant fossils outlined on weathered surface; becomes extremely fossiliferous towards top of unit; medium to massive bedded; stromatoporoids quite prominent with corals (flavosites & syringopora?) and possibly some bryozoan fragments. Up to 50% sparry calcite at base with lesser amounts towards the top.	8	50
70	Covered Interval.	15	42
69	Argillaceous Microcrystalline Limestone-medium light grey weathering; dark grey; up to 40% sparry calcite infilling vugs and fissures.	2	27
68	Covered Interval.	1.5	25
67	Argillaceous Microcrystalline Limestone-similar to unit 69.	2	23.5
66	Covered Interval.	2	21.5
65	Biomicrudite-medium light grey weathering; medium grey; Amphipora pronounced on weathered surface; up to 70% fossil content; approximately 15% sparry calcite.	3	19.5
64	Fossiliferous Microcrystalline Limestone Breccia-medium light grey weathering; medium brown grey; fractures 2" to 3" in diameter surrounded by sparry calcite; some sparry calcite infilling fissures and birds eye vugs; up to 15% fossil content; slightly dolomitic.	2.5	16.5
63	Covered Interval.	3	14

62	Fossiliferous Microcrystalline Limestone-light grey weathering; medium grey; up to 40% sparry calcite; 10-15% fossil content; mostly brachiopod fragments; fossils poorly defined in fresh surface.	1	11
61	Covered Interval.	5	10
60	Biomicrudite-light grey weathering; medium grey; in part granular texture; approximately 20% sparry calcite; Amphipora and brachiopod fragments outlined on weathered surface, but masked on fresh exposure; 40-50% fossil content.	5	5

SECTION III

Located on south facing slope on the plateau, beginning at 20W,12S on the geophysical grid. The approximate location is 57° 22' N and 123° 49' W. The outcrops occur in steps up the side of the hill, separated by covered intervals. For the most part the exposures are rubbly but in place.

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	THICKNESS FROM BASE OF SECTION (FEET)
131	Dolomitic Microcrystalline Limestone-light grey weathering; medium brown grey; up to 30% sparry calcite; slightly silty; sparry calcite occurs infilling vugs and fissures.	5	59.5
130	Covered Interval.	2	54.5
129	Fossiliferous Microcrystalline Limestone-weathers medium light grey; medium to medium dark grey; 20% sparry calcite infilling of birds eye vugs; trace of fossil fragments on weathered surface; recrystallized.	6.5	52.5
127	Microcrystalline Limestone-light grey weathering;medium brown grey; dolomitic; sparry calcite infilling fissures.	1	41
126	Microcrystalline Limestone-weathers light grey; medium grey; argillaceous.	5	40
125	Biomicrudite-weathers very light grey; medium grey; medium to massive bedded; rubble outcrop; fractured; some sparry calcite; fossils	8.5	35

	show on weathered surface; coral, stromatoporoid, Amphipora; dolomitic.		
124	Covered Interval.	7.5	26.5
123	Fossiliferous Microcrystalline Limestone-medium light grey weathering; medium dark grey; thin to medium bedded; slightly argillaceous; approximately 20% sparry calcite infilling birds eye vugs and fissures; fossil traces on weathered surface.	1.5	19
122	Covered Interval.	6.5	17.5
121	Argillaceous Microcrystalline Limestone-medium light grey weathering; dark grey; approximately 10% sparry calcite.	3.5	11
120	Covered Interval.	3	7.5
119	Microcrystalline Limestone-weathers light grey; medium brown grey; dolomitic; some sparry calcite infilling of birds eye vugs and fissures.	1.5	4.5
118	Covered Interval	1.5	3
117	Microcrystalline Limestone-similar to unit 119.	1.5	1.5

APPENDIX II

RECEIVED JUL 18 1973

RIO ALGOM MINES LIMITED
MINING DIVISION
RESEARCH & DEVELOPMENT DEPARTMENT

R. A. Benkis
File

ANALYSIS REPORT

DATE: July 16, 1973

LAB NO.	SAMPLE DESCRIPTION	% Pb	% Zn			
G-1000	C-25751	.0040	.0122			
1	2	.0034	.0008			
2	3	.0036	.0016			
3	4	.0008	.0007			
4	5	.0042	.0007			
5	6	.0038	.0013			
6	7	.0030	.0012			
7	8	.0036	.0008			
8	9	.0040	.0009			
9	C-25760	.0038	.0010			
G-1010	1	.0040	.0013			
1	2	.0040	.0022			
2	3	.0042	.0012			
3	4	.0004	.0005			
4	5	.0036	.0008			
5	6	.0036	.0016			
6	7	.0030	.0027			
7	8	.0030	.0129			
8	9	.0036	.0009			
9	C-25770	.0044	.0013			
G-1020	1	.0036	.0009			
1	2	.0040	.0010			
2	3	1.80	.0007			
3	4	.0170	.0008			
4	5	.0070	.0010			
5	6	.0050	.0008			

L. M. Malaina

APPENDIX III

STATEMENT OF QUALIFICATIONS

I, Rolands A. Benkis, am a graduate of Carleton University at Ottawa, Ontario, with a degree of Bachelor of Science in Geology.

Since my graduation in 1962, I have continuously practiced my profession with the following companies:

O'Brien Gold Mines Ltd., Ottawa,
1962-1966

Penarroya Canada Ltee, Toronto,
1966

Rio Tinto Canadian Exploration Limited, Toronto.
1966 to present.

I am a Fellow of the Geological Association of Canada.

Rolands Benkis

Toronto, Ontario
August 2, 1973.

Rolands A. Benkis
B.Sc., FGAC

GEOLOGICAL ASSOCIATION OF CANADA
R. A. BENKIS
FELLOW

PLATE 2

Moving camp at Redfern Lake.

PLATE 3

Aerial view of Redfern Plateau (looking north). Eastern end of Redfern Lake visible in extreme lower left corner of photo.

PLATE 4

On top of Redfern Plateau; note the scree covered ground (looking west).

PLATE 5

Distorted Dunedin strata along the eastern side of Redfern Plateau, near the faulted contact with Besa River shales (looking north).

PLATE 6

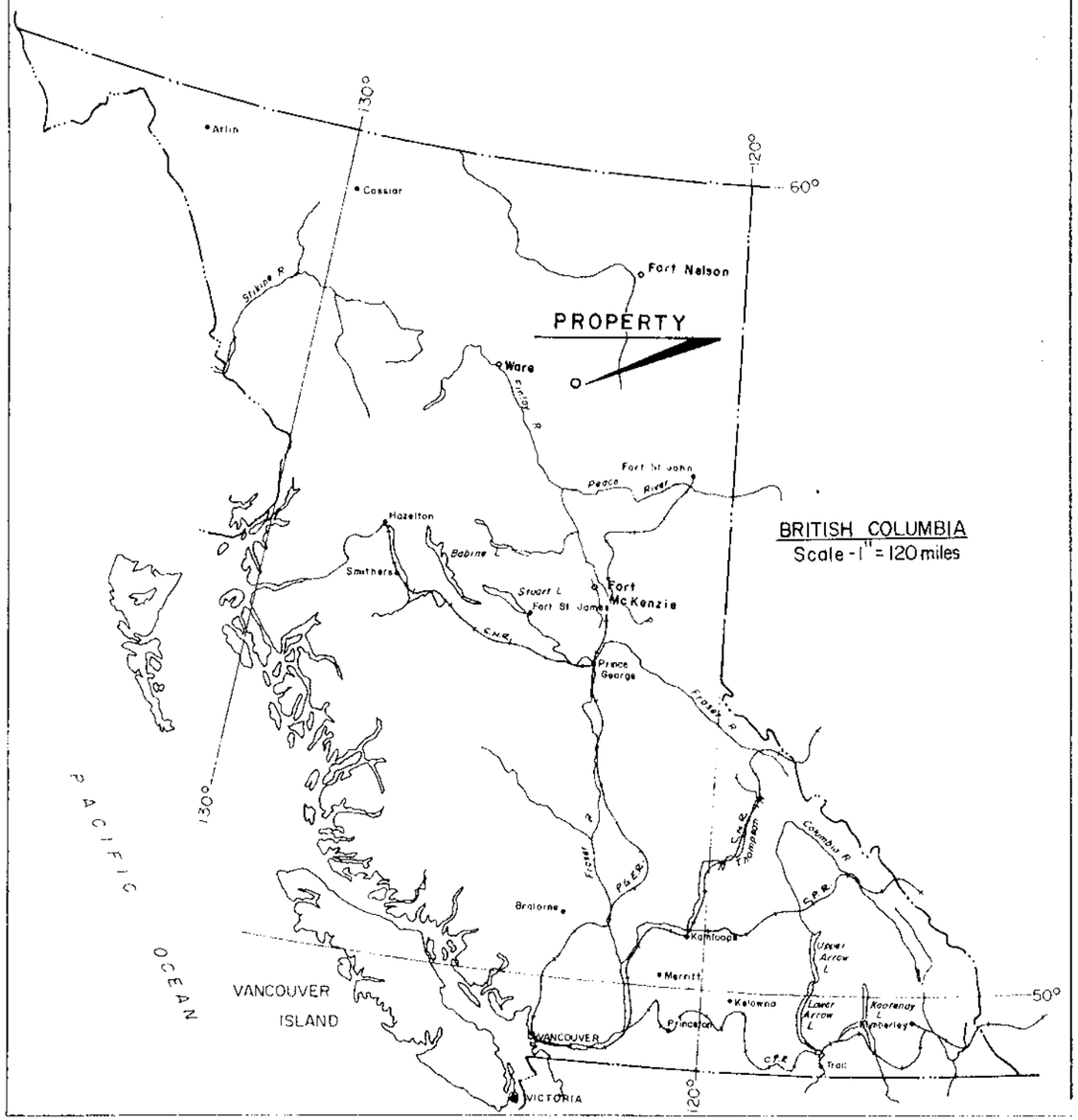
Dunedin outcrop in stream gulch on southwestern side of Redfern Plateau. The exposures visible in the photo are where Section I was measured. Redfern Lake is the background (looking southwest).

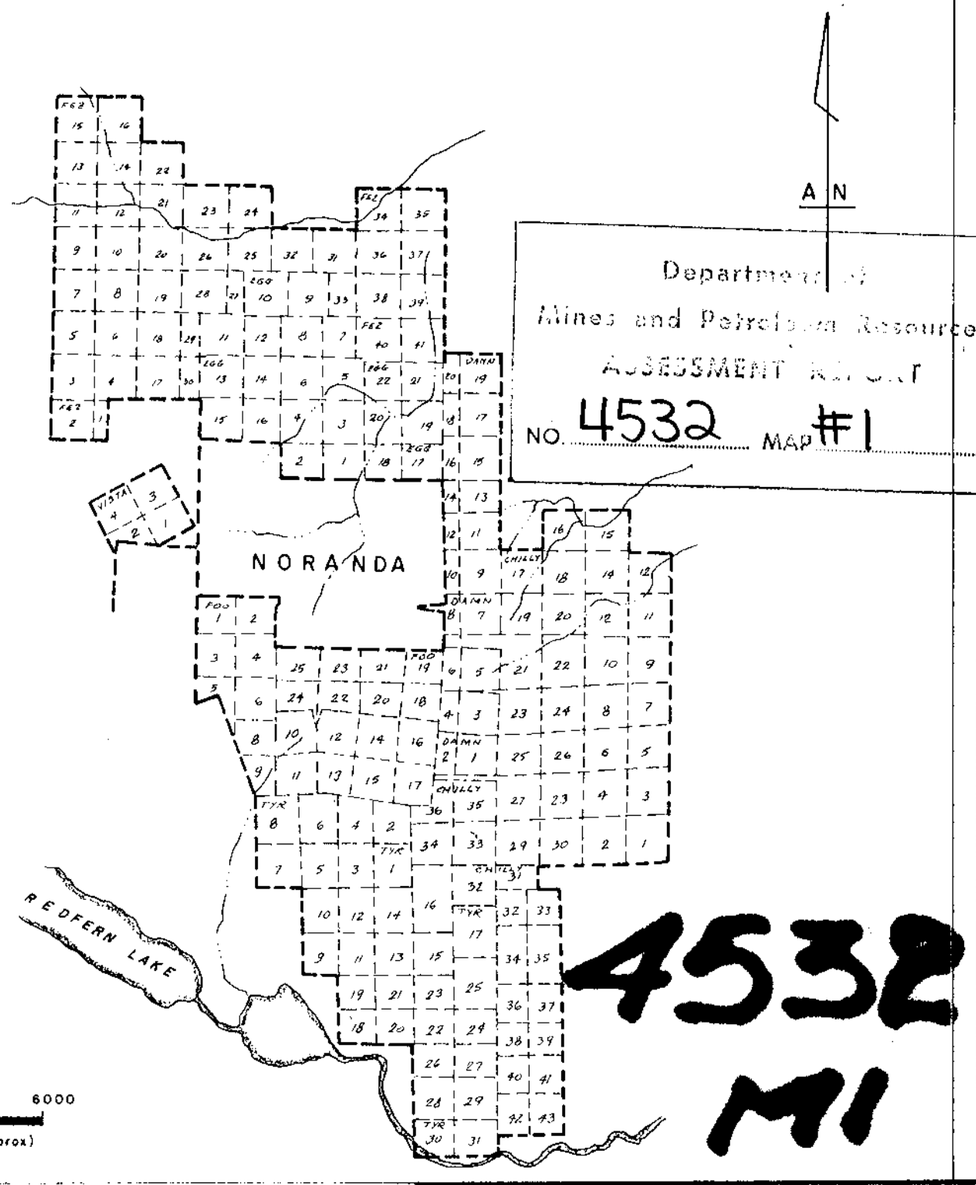
PLATE 7

Scree "outcrop" on Redfern Plateau (looking west).

PLATE 8

Snowfield on Redfern Plateau.





N.T.S.
94 - G - 5

RIO TINTO CANADIAN EXPLORATION LTD.

VESTOR OPTION – B.C.

REDFERN LAKE AREA

LOCATION MAP

July - 1973 R.A.B. /e.k. DWG L - 2632

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REDFERN LAKE AREA

CLAIM MAP

July - 1973 | R.A.B. / e.k. | DWG. C - 3421

R. Benkis Aug 2/73

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Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4532 MAP #2

SCALE

4532
MAP #2

123° 50'

57° 24'

Creek

Petrie

BASE LINE

L - 36 N

L - 32 N

L - 28 N

L - 24 N

L - 20 N

L - 16 N

L - 12 N

L - 8 N

L - 4 N

L - 0

Egg 8 | Egg 7
Egg 6 | Egg 5

Egg 6 | Egg 5
Egg 4 | Egg 3

3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4300 4400 4300 4800 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 6900 6800 6400 6300 6000 6300 6300 6200 5500 5400 4600 4700 4800 4900

Note: For Legend See map G-4

KEY

1

2

N.T.S. 94-G-5

SCALE

400 0 400 800 1200 1600

FEET

RIO TINTO CANADIAN EXPLORATION LIMITED

VESTOR OPTION — B. C.

REDFERN LAKE AREA

GEOLOGICAL MAP

July — 1973 R.A.B., O.C. / e.k. DWG. G-4432-1

123° 50'

57° 22'

SECTION I.

SECTION II.

SECTION III.

BASE LINE

L-36E L-32E L-28E L-24E L-20E L-16E L-12E L-8E L-4E L-0 L-4W L-8W L-12W L-16W L-20W L-24W L-28W L-32W L-40W L-44W

6700 6600 6500 6400 6300 6200 6100 6000 5900 5800 5700 5600 5500 5400 5300 5200 5100 5000 4900 4800 4700 4600 4500 4400 4300 4200

Deep Sink Hole

Bee 319 Foo 21 | Bee 320 Foo

Foo 4 Foo 25 Foo 6 Foo 24

Foo 25 Foo 23 Foo 24 Foo 22

Foo 23 Foo 21 Foo 22 Foo 20

Foo 10 Foo 12 Foo 11 Foo 13

Foo 12 Foo 14 Foo 13 Foo 15

Foo 14 Foo 16 Foo 15 Foo 17

Damn 10 Damn 9 Damn 8 Damn 7

Damn 8 Damn 7

Damn 4 Dame 3 Damn 2 Damn 1

Dame 2 Chilly 36 | Damn 1 Chilly 35

N

A

LEGEND:

DEVONIAN

2 Besa River Formation: Shale

1 Dunedin Formation: Limestone, Dolomatized limestone

Measured Section

Thrust Fault

Anticline Axis

Syncline Axis

20 Strike and dip

X Outcrop

△ Float

Claim post located

Ba Barite

F Fossils

Gn Galena

Py Pyrite

KEY

1

2

N.T.S. 94-G-5

SCALE

400 0 400 800 1200 1600

FEET

RIO TINTO CANADIAN EXPLORATION LIMITED

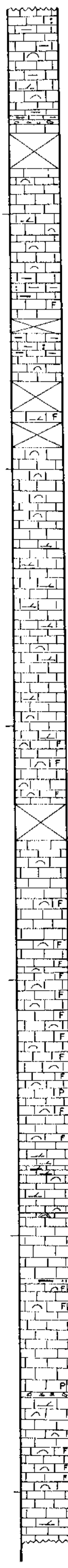
VESTOR OPTION - B.C.

REDFERN LAKE AREA

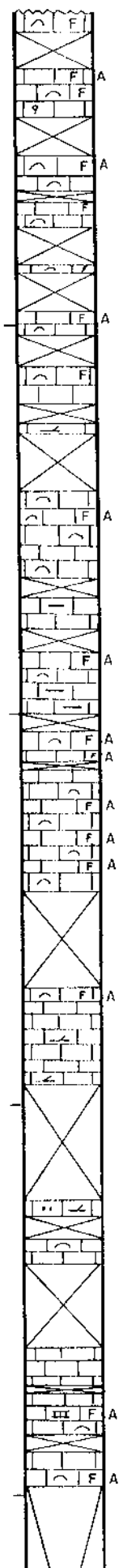
GEOLOGICAL MAP

July - 1973 R.A.B., O.C./e.k. DWG. G-4432-2

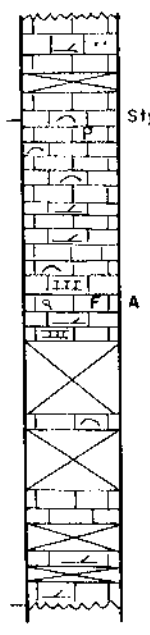
SECTION I.



SECTION II.



SECTION III.



450'
400'
350'
300'
250'
200'
150'
100'
50'
0

LEGEND:

- Limestone
- Covered Interval
- Dolomitic
- Silty
- Algal
- Argillaceous
- Breccia
- Bioclastic or Fragmental
- Coral
- Stromatoporid
- Bryozoa
- P — Pyrite
- F — Fossils
- A — Amphipora
- Styl — Stylolite

R. Benkis
Reg. 2/73

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Vertical Scale: 1" = 20 ft
Horizontal not to scale

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4532 MAP #5

4532-M5

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94 - G - 5

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REDFERN LAKE AREA

MEASURED GEOL. SECTIONS

July - 1973 | R.A.B., O.C./e. k. | D.W.G. G-3423