ALBERT RIVER TUNGSTEN PROPERTY

ALBERT RIVER 82J/12E

GOLDEN MINING DIVISION

LAT 50 DEGREES 38 MINUTES NORTH LONG 115 DEGREES 35 MINUTES WEST

LOG NO: 1011	RD.
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FILE TO:	

FOR

DIA MET MINERALS LTD.

KELOWNA, B.C.

FILMED

BY

C.E. FIPKE

C.F. MINERAL RESEARCH LTD. 1677 POWICK ROAD KELOWNA, B.C.

OCTOBER, 1988

GEOLOGICAL BRANCH ASSESSMENT REPORT

, 55

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Introduction

During the period July 12, 1987 to July 11, 1988, geologic structure mapping, bulk heavy mineral talus sampling, analysis of heavy mineral concentrates for rare earths and gold, etc., as well as summary geologic engineering report writing was completed on the Albert River Tungsten group claims.

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The location and access, claim descriptions, geology, geochemistry, geophysics and recommendations are summarized to May 10, 1988 in the engineering report by Dr. E.A. Schiller, Appendix A.

<u>Methodology</u>

1. Regional Structural Mapping

The Albert River Tungsten claim block was geologically mapped by structural geologist Dr. D.K. Norris on a scale of 4.5 cm = 1000 meters. This was accomplished during a 3 day period with the use of air photos and an Okanagan helicopter based out of Canmore, Alberta.

2. Field and Laboratory Methodology

About 9 kilograms of -20 mesh stream sediment samples were collected from placer favorable sites AC 7, 8 and 10, in streams draining the claims group. Seven 10-15 kilogram samples of unsieved talus samples (AC 1-6, 9) were collected on a north-trending line on the Rachel claim (Figure 2). The bulk samples were transported to C.F. Mineral Research Laboratory in Kelowna, B.C., where they were wet sieved, washed and jigged into -20+35, -35+60 and -60 mesh rough concentrates. Up to 1000 grams of the -20+35, 1200 grams of the -35+60, and all of the -60 mesh rough concentrates were then treated by tetrabromoethane and dilute methylene iodide to produce specific heavy liquids gravity fractions intermediate to tetrabromoethane (S.G. 2.96) and methylene iodide (S.G. 3.3).

The heavy specific gravity fraction (+3.3 S.G.) is subjected to three electromagnetic separations so that heavy magnetic, paramagnetic and nonmagnetic fractions of primary ore minerals are produced. The resultant heavy magnetic fractions underwent U.V. lamp inspection for the presence of scheelite. The -60 mesh heavy nonmagnetic fractions were submitted for Au + 26 analysis via the delayed neutron activation method at Nuclear Activation Services Ltd. of mesh Hamilton. Ontario. The -60 heavy nonmagnetic samples AC 1 to AC 6 (inclusive) were concentrates of

combined. This composite sample (labelled Sample A) as well as the -60 mesh HN concentrate of sample AC 8 (labelled Sample B) were analysed at the Cominco Laboratory in Vancouver for Y-Zr-Ce-La-Nb-Ta-U-Th via XRF and for Be via a specific technique.

Results

The geologic map and cross section compiled by Dr. D.K. Norris is given as Figures 3 and 4 of Dr. E.A. Schiller's progress report (Appendix A). Dr. D.K. Norris' geologic conclusions are given as Appendix B.

The heavy mineral sample locations are plotted on Figure 10. The heavy mineral concentrate analytical results of Nuclear Activation Services 1td. and of Cominco Laboratories are given as Appendix C. The gold-W-Ce results are plotted with previous results on Figures 6, 7 and 8 respectively of Dr. E.A. Schiller's report (Appendix A).

<u>Conclusions</u>

The conclusions of Dr. D.K. Norris are given as Appendix B. The conclusions of Dr. E.A. Schiller are given in Appendix A, page 15.

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The extraordinary anomalous Au-W and rare earths results of concentrates from talus and stream sediments are most consistent with a near surface alkaline intrusion with flanking auriferous skarn deposits adjacent the limestone units in the northern part of the claims. Alternatively, a rare earth carbonatite could be a source for the highly anomalous Ce-La-Eu-Yb-Sm-Y values of Appendix C.

Recommendations

The recommendations of Dr. E.A. Schiller are given in Appendix A, page 16. Owing to the high thorium present with the rare earth elements in concentrates of talus samples, (perhaps airborne) radiometric geophysical as well as ground magnetic geophysical surveys and talus heavy mineral surveys could be considered to be utilized to identify the location of any alkaline or carbonatite intrusions as well as flanking skarns and mineralizations in the northern part of the claims.

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Statement of Expenditures

6 days of Dr. D.K. Norris for geologic field mapping, travelling and compilation of geologic map, cross section and report of conclusions @ \$350 00 per day	
of conclusions & \$550.00 per day	\$ 2,100.00
Cost of air photos and courier	\$ 151.20
Expenses of above including car rental	\$ 526.15
7.5 hours helicopter including gas and oil	\$ 4,145.30
Heavy mineral processing and analytical costs	\$ 2,319.10
4-1/2 days field collection of bulk samples including travelling @ \$175.00 per day	\$ 787.50
Rental of 1 four-wheel drive and expenses involved in the collection of 10 bulk samples	\$ 680.00
Communication: long distance telephone and radio rental	\$ 225.00
Engineering report by Dr. E.A. Schiller	\$ 1,000.00
Courier charges Kelowna-Hamilton and Hamilton-Vancouver	\$ 57.00
Assessment report writing and compilation by geologist C.E. Fipke	\$ 525.00
Drafting, report proof reading and typing, copying and materials	<u>\$ 460.00</u>
SUBTOTAL	L \$12,976.25
Remove from PAC account of Dia Met Minerals	s <u>\$ 3,423.75</u>
TOTAL	\$16,400.00
	-

Statement of Qualifications

Charles E. Fipke - Kelowna, B.C.

Owner/Operator of C.F. Mineral Research Ltd. B.Sc. Honours Geology, University of British Columbia Member of the Association of Exploration Geochemists of North America, Member of the Canadian Institute of Mining & Metallurgy.

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Since 1970 Mr. Fipke has worldwide experience as a geologist, specialized in heavy mineral geochemistry i.e., New Guinea, Australia, New Zealand, South Africa, Brazil, Canada and U.S.A.

Founded C.F. Mineral Research Ltd.; coordinated and assisted in the design of a heavy mineral and conodont laboratory unique to the western world; is experienced in the diamond indicator mineral industry; has published papers and articles which are widely used in the industry.

GEOLOGICAL PROGRESS REPORT

ON THE

ALBERT RIVER CLAIMS

GOLDEN MINING DIVISION

BRITISH COLUMBIA

LATITUDE 500 38'N

ţ,

LONGITUDE 1150 35'W

82J/12E

E. A. SCHILLER May 10, 1988

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ABSTRACT

This report reviews the geology and mineral potential of a claim block located near Golden, British Columbia and serves as an update of a report written by the author in June, 1986.

The claims cover an area with the potential for the discovery of gold, tungsten, copper, lanthanum, and cerium and possibly other rare-earth elements, based on anomalous values of these metals contained in stream sediment and talus gravels concentrates. The coincidence of magnetic data with elevated geochemical values has been identified in two anomalous areas referred to as North and Central Anomalies and interpreted to represent buried alkaline igneous intrusives. Based on exploration and mining activities in southern B.C. and northern Washington State it is possible that the Albert River claims are underlain by skarn type- gold deposits.

A two – stage program is recommended comprising geochemical, geological and geophysical surveys, and followed by diamond drilling, and estimated to cost \$200.000.00.

INTRODUCTION

This report reviews the geology and mineral potential of an 88 unit claim block located in the Golden Mining Division, British Columbia (Fig.1). The claims were staked in 1980 to cover gold and tungsten anomalies uncovered from a reconnaissance heavy mineral stream sediment survey. Since that time, geophysical and geological surveys and additional heavy mineral sample analyses have identified two high priority exploration targets related to coincident magnetic and geochemical anomalies. Due to the expected presence of a buried plutonic intrusive, of probable alkaline composition, (syenite ?) a continuation of the exploration program is strongly recommended.



CLAIM DESCRIPTION AND LOCATION

The Albert River claims consist of six claim groups comprising 88 units located 29 kms. east of Radium Hot Springs, British Columbia in the Golden Mining Division at latitude 50° 38' N and longitude 115° 35' W. The claims lie to the west of the headwaters of the Albert River along the eastern margin of the Main Ranges of the Rocky Mountains, immediately adjacent to the Front Ranges (Fig. 2). The claims are recorded in the name of Dia Met Minerals Ltd. and registered as follows;

CLAIM UNIT	NUMBER OF UNITS
Dingbat	5
Burb	20
Barbt	18
Ash	20
Chester	20
Zirkon	5

The claims are accessible from B.C. highway # 93 eastward via a maintained logging road.



PREVIOUS WORK

The claims have been subject to several periods of investigation since they were staked in 1980. Principle reports prepared describing the results of these activities are as follows.

- Report of Albert River Tungsten Property, Albert River 82J/12E Golden Mining Division - by K. E. Northcote & Associates Ltd. and Gower Thompson & Associates Ltd. - June, 1983.
- Report on Albert River Tungsten Property, Albert River 82J/12E
 Golden Mining Division by C. E. Fipke September, 1985.
- Review of Properties held by Dia Met Minerals Ltd. by E. A. Schiller -June, 1986.
- Ground Magnetometer Survey on Albert River Tungsten Property, British Columbia – by P. P. Neilsen – December, 1986.
- Geological Report on the Albert River Claims, Golden Mining Division,
 B. C. by E. A. Schiller April, 1987.
- Letter Report Albert River claims, B. C. by D. K. Norris, October, 1987.

GEOLOGY OF CLAIM BLOCK

The claims are underlain by limestone, argillaceous limestone, calcareous argillite and shale of the Middle Cambrian Chancellor Group intruded by pyritic and siliceous rhoylite sills (Fig. 3). The strata are positioned on the boundary of the Cordillera miogeosyncline-eugeosyncline along the margin of the North America tectonic plate. The sequence is isoclinally folded about northwest trending axes with steep west dipping axial planes. Norris (1987) interpreteds the Chancellor Group to be folded into an anticlinorium truncated on its east flank by a major, southwest-dipping contraction fault (Albert Fault) that divides the claims into two northwest-trending structural domains (see schematic cross-section, Fig. 4). A spotted hornfelsic unit shows a skarn effect probably derived from a buried igneous body.

Quartz-carbonate veins and dykes that range from one to two meters wide cut the basal argillaceous limestone and sills, infilling the axial cleavage planes and the bedding planes. Minor amounts of epidote, chalcopyrite and pyrite and lesser amounts of galena and sphalerite are present in the guartz-carbonate veins.

Moderate amounts of finely dispersed scheelite were found in a marble dyke directly downslope from the highest magnetic response in the Central Anomaly area.

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GEOPHYSICAL RESULTS

The claim block was covered by a helicopter-borne magnetic survey in 1981 that delineated a modest anomaly in the central part of the claims (Central anomaly) and a low anomaly in the northern part of the claims (North anomaly). The Central anomaly was further divided into west and east anomalies that Nielson (1986) interpreted to be a 550 meter diameter buried intrusive igneous body possibly flanked by two sub-vertical pyrrhotite mineralized bodies. In 1987, ground magnetic surveys over the North Anomaly identified several isolated anomalies between 460 and 505 gammas. Due to the coincidence of geochemical response to the elevated magnetic features, it appears that a buried, igneous intrusive body is the likely explanation to this geophysical signature (Fig. 5).

GEOCHEMICAL RESULTS

The heavy mineral concentrates from stream sediments draining the Central Anomaly are strongly anomalous in scheelite (up to 6.6 % tungsten), up to 26,900 ppm copper, and modestly anomalous in gold (up to 600 ppb). One concentrate stream sample contained 3460 ppm cerium. (Figs. 6, 7, 8, & 9).

Heavy mineral concentrates from the North Anomaly contains tungsten up to 12 %, and gold values up to 50,000 ppb. In 1987, additional sampling discovered cerium and copper anomalies up to 70,300 ppm and 9,800 ppm, respectively.

It can be concluded that an igneous body is in close proximity to both anomalies and that its composition is very likely alkaline (syenitic).

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Schematic Cross-Section, Albert River Claims, B.C. Scale: 1:22989















EXPLORATION PARAMETERS

The Albert River claims are considered to be an important gold and tungsten exploration target as determined from the preliminary results to date. In addition, the geochemical data suggests an alkalic affiliation that enhances the possibility of discovering a rare-earth deposit. (The Ice River alkalic intrusive complex lies 60 kms to the north of the claims).

Of greater significance, is the possibility that the Albert River – North and Central Anomalies with coincident magnetic and geochemical highs could represent Cordillera skarn – type gold deposits comparable to that of Mascot Gold Ltd. at Hedley, B.C. Further analogies, with alkaline affinities is the Crown Resources Inc. Buckhorn gold prospect at Torode, Washington southwest of Midway, B.C. Near Republic, Washington, south of Grand Forks, B.C., Echo Bay Mines Ltd. and partners are preparing their KEY skarn gold deposits for production. Although no obvious alkaline affiliation has been recognized, the KEY-Overlook, KEY-West and KEY-West are associated with magnetite-rich rocks at the contact between granitoid and Paleozoic sedimentary rocks. Of interest, the Key-Overlook deposit was a buried gold discovery found by magnetics and contains in excess of 100,000 ounces of gold in ores that grade about 0.17 oz./ton.

RECOMMENDATIONS FOR FURTHER WORK

It is proposed that a two stage exploration program be implemented in 1988 to test the deposit model advocated in this report.

Stage One:

Detailed geochemical sampling, geological mapping and geophysical surveys on the North Anomaly One geologist, one technician and one geophysical operator and one student assistant. One month to complete program (June-July) \$50,000.00

Stage Two:

Diamond Drilling (includes helicopter support)2,000 meters @ \$85.00 per meter\$170,000.00Assays and analytical services10,000.00Geological supervision and support20,000.00Six weeks to complete program (July-August)

Total

\$200,000.00

CERTIFICATE

- I, EDWARD A. SCHILLER, do hereby certify:
- 1. THAT I am a consulting geologist with offices at 8 Varview Place, Calgary Alberta.
- 2. THAT I graduated in geology from the University of Utah in 1963 with a Doctor of Philosophy Degree.
- 3. THAT I am a registered professional geologist in the Association of Professional Engineers, Geologist and Geophysicists of Alberta.
- 4. THAT I have practiced my profession for 25 years.
- 5. THAT I have no interest direct nor indirect in the mineral claims herein reported nor do I hold securities in any form, direct nor indirect in Dia Met Minerals Ltd.
- 6. THAT this report dated May 10,1988 is based on a review of pertinent reports and maps and general knowledge of the Albert River area.
- 7. THAT I consented the use of this report by Dia Met Minerals Ltd. in a Prospectus or Statement of Material Facts.

DATED at Calgary, Alberta this 10th day of May, 1988.

& Habelle

CONCLUSIONS

Regarding the Geology of the

Albert River Claims

1. The Albert River Claims, centred approximately at Longitude 115° 36'W, Latitude 50° 38'N, at the headwaters of Albert River, are located along the eastern margin of the Main Ranges of the Rocky Mountains, immediately adjacent to the Front Ranges.

2. The mineralization, at whatever stratigraphic level, appears to be associated with the regional westward facies change from a distinctive set of alternating grey carbonate rocks and varicolored clastics comprising the Cambrian and Ordovician Systems of the Cordilleran miogeosline, to a rather monotonous assemblage of grey clastics with some carbonates comprising the eugeocline of the western margin of the North American plate.

3. Within and along strike with the Albert River Claims, the stratigraphic succession is herein assigned to the Middle and Upper Cambrian Chancellor Formation. No fossils were found to support this assignment. However, the succession has been broken down into three, informal, readily mappable, lithostratigraphic units that are homotaxial with the three-fold sublivision of the Chancellor recognized by G.S.C. throughout the Main Ranges (see Geological Map). These are, from oldest to youngest, 6chl, 6chm and 6chu, collectively containing progressively decreasing amounts of limestone both upwards and laterally westwards.

4. The limestone unit (Echl), therefore, is at the <u>base</u> of the stratigraphic succession rather than at its top as portrayed in assessment reports of the Albert River Claims.

5. The Chancellor Formation is folded into an anticlinorium truncated on its east flank by a major, southwest-dipping contraction fault (Albert Fault) that divides the claims area into two northwest-trending structural domains (see Schematic Cross-Section). Individual folds comprising the anticlinorium appear to be cylindrical and to range in style from rounded to spectacularly chevron, as a function of the rhythm of interlayering of shale within linestone. In addition, peltic rocks in both the hanging- and footwall of Albert Fault are characterized by a penetrative array of axial plane cleavage that parallels the regional strike of the folds and dips in the neighborhood of 65° to the southwest.

6. The scheelite mineralization appears to be associated with Unit Schm, the middle Chancellor. It occurs reportedly as fissure and vein filling in the axial plane cleavage (C. Fipke, pers. Comm., 1987).

7. The anomalous concentration of rare earths (Ce and La) in stream samples reported from the Rachel-Barbi claim boundary would appear to have its source in the upper Chancellor (Cchu) in the footwall of Albert Fault, but it may be floating downwards from the middle Chancellor (Cchm) in the hanging-wall.

8. The acid igneous intrusion postulated in the Schematic Cross-Section is purely hypothetical, following that shown in the assessment reports of the claims area. It is intended to account at least in part for the sagnetic anomaly reported in that part of the claims.

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9. Should the scheelite mineralization be genetically related to an acid igneous intrusion at depth, it is postulated that it is synkinematic, that is, after initial folding and development of axial plane cleavage, but before regional contraction faulting that decapitated the intrusion (see Schematic Cross-Section).

N.U. Menies

D.K. Norris PhD, October 23, 1987

APPENDIX C

NUCLEAR ACTIVATION SERVICES LIMITED

1280 MAIN STREET WEST, HAMILTON, ONTARIO, L8S 4K1

PHONE (416) 522-5666 TELEX 06-986947

CERTIFICATE OF ANALYSTS

TO: C.F. HINERALS RESEARCH LTD. ATTN: MR. C. FIPKE 263 LAKE AVENUE, KELOWNA, BRITISH COLUMBIA VIY 5W6

CUSTOMER NG. 20/01/01

DATE SUBMITTED 27-JAN+88

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SAMPLE NUMBERS

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CA	5 F F 19	27	INTERFER	<65	<2.0	<110	INTERFER
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CR	P P M	110	1700	S60	1300	930	660°
FE	2	31.0	5.31	4.33	5.36	7.83	40.0
HF	2 F M	140	300	69	180	120	<1
HO	654	<70	<760	<2.0	<50	<410	< 2 0
NA	"Y	<5+3	<1-8	· <10	BATERATS	<13	<13
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NUCLEAR ACTIVATION SERVICES LIMITED

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BA	РРМ	4700	<4 100	1000	20000	800	-1200
CA	9 73	<1	<29	<4	<150	<1	9
CO	вЪм	1000	83	27	<54	120	150
CR	PPM	30	<140	30	960	110	150
Ēξ	e) 6	51.5	34.7	5.30	4 - 27	67.3	65.2
HF	PPM	27	<1	<1	K30	<2	5
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ZN	PPM	1490	<600	<200	<1000	200	500
LA	PPM	2910	3490	1170	44300	1320	1370
30	⊘рм	3450	3970	1540	54000	2100	2330
SM	⊇ P M	103	184	65:3	3030	98.5	113
FU	PPM	12+9	<0.2	9+6	1850	12.0	15.7
SY	2 P M	3.8	<11.0	2+0	<31.7	7.3	21-2
LU	ррм	0.71	<0,05	0.73	4.55	0.73	2-13
IR	⊅ p q	< 5.0	<50	. < ₹0	くさら	<50	<50

NUCLEAR ACTIVATION SERVICES LIMITED

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SAMPLE NUMBERS

ELEM & UN	ENT	1369Q AC3-6* 10HP-0.45HP*	* 370Q AC3** *60HP+0•5HP**	* 3710 AC3** *60HP+0.5HP**	372Q** DM 1+60HN**	373Q** DM 2-60HN**
	PPM	 <5	<5	< 5	< 5	<5
AS	ррм	39	97	160	220	100
AU	664	<23	<5	150	270	<130
BA	PPM	500	1000	2200	5900	5200
-CA	ζ,	< 2	<1	S [>	54	<33
ce	N g q	116	24 0	23.0	100	290
CR	DEM	20 -	70	1章 (1	200	130
Fa	72	51.3	44.3	64+2	20.2	26+6
HF	n pht	1	<1	< 5	1.0	<15
MO	PPM	50	<20	<20	<110	<70
NA	2	<0.05	<0.85	<2-0	<3.7.	0.12
NI	₽ P M	300	600	1200	<1500	<3500
5.5	ррм	3.5	7.5	14	10	23
50	арм	11.1	1.3.0	12.5	0.∎6	3.4
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9	P P M	2.0	3.3	<7.1	INTERFER	<19.8
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ZŇ	₽₽M	30.0	300	40 O	4 O O	1200
LA	PPM	172	546	3010	9950	4920
CE	сри	525	943	4720	12600	5220
S.M	0 P M	37.1	59.4	331	514	215
EU	p p v	5.9	9.5	41.2	79.7	46.5
YΒ	рри	27.1	23.8	11+2	3 - 3	<10.1
້ະບ	ррм	2.96	2.65	1.69	1.02	<0.57
IR	268	<50	<50	<~ 0	<10	<50

EXPLAMATION OF CODES

INTERFER - DETECTION WOT POSSIBLE DUE TO INTERFEDENCE VARIABLE DETECTION LIMITS DUE TO SAMPLE COMPOSITION.

	. To	bia i	Net N	Mineval_	te ctd.	MAY 2	5 1988	Commes	in an
2 2 2		Samo	& (A)			Sample	(8)		
		Albert	R.			364	R		· · · ·
<u></u>		Compos	te 60 HN	[
		+		· · · · ·	: I				ļ
			225	(ppm)		· · · · · · · · · · · · · · · · · · ·	< 20	(pom)	
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	zr		E3500			<u> </u>	150		
·	6	<u>.</u>	5,520			- <u> </u>			
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	Nb		60				< 20		
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	17		400				250		[
	Ba								
	De		1.0				0.2		
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			TO : :	DIA M	ET MI	VERALS	479.		
				1675 P	DWICK	ROAD			
				KELOWNI	- , B.C	, -			
				VIX-41	-1				
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