830543

NTS	94K/12
Lat	58°33'N
Long	125°32'W

G. W. G. SIVERTZ

SUMMARY REPORT on the OKEY PROPERTY Fort Nelson area, Liard Mining District British Columbia

for

BGM DIVERSIFIED ENERGY INC. 1016-1030 West Georgia Street, Vancouver, B.C. V6E 1Y3 Tel: (604) 688-2401 Fax: (604) 682-3736

by

George Sivertz, P.Geo.

RELIANCE GEOLOGICAL SERVICES INC. 241 East 1st Street North Vancouver, B.C. V7L 1B4 Tel: (604) 984-3663 Fax: (604) 988-4653

3 May 1995

Reliance Geological Services Inc. -

SUMMARY

This report was written at the request of BGM Diversified Energy Inc to summarize previous exploration work done on the Okey property (formerly Copper-Keays).

The Okey property comprises 1 mineral claim, totalling 20 units in the Fort Nelson area, B.C. The property is situated approximately 170 kilometers west-southwest of Fort Nelson. Access is by rough 4WD road for approximately 37 kilometers south of the Alaska Highway, or by helicopter.

The area was active during the 1950's, 1960's, and early 1970's. Significant discoveries included the Davis Keays (Eagle Vein), Churchill Copper (Magnum Vein), Copper Keays (Neil Vein), and Fort Reliance (Reliance Vein). Churchill Copper produced from 1970-1974, milling 598,000 tons grading 3.00% copper. The Davis-Keays was explored by over 7000 meters of underground development on the Eagle vein. Production was planned, but never commenced due to poor economic and political conditions.

The Okey property was actively explored from 1970-1972. Work included geological mapping, road building, bulldozer trending, stripping, and seven diamond drill holes totalling 680 meters. Underground development on the Neil vein was planned but neverstarted.

The geology of the Okey property consists of shales and dolomites belonging to the Precambrian Aida formation. Mineralization is associated with a shear zone that parallels a diabase dyke. Chalcopyrite is disseminated and semi-massive within quartzcarbonate veins and breccia zones. The Neil vein has been traced over a strike length of 1190 meters and a vertical extent of 580 meters.

i

Sampling from trenches on the Neil Vein has outlined potentially economic grades of copper over widths of 1.0 - 1.5 meters. Sampling from the Breccia Zone of the northeast end of the Neil Vein has outlined enhanced copper values, mainly over 5%. The width of the Breccia Zone in one area has been reported to be at least 30 meters.

Further work consisting of geological mapping, trenching, sampling, and magnetic and VLF-EM surveys has been recommended to establish drill targets. Estimated cost is \$88,000.

TABLE OF CONTENTS i SUMMARY . 1 INTRODUCTION 1.0 LOCATION, ACCESS and PHYSIOGRAPHY 2 2.0 3 3.0 PROPERTY STATUS . . . 4 4.0 AREA HISTORY . б PREVIOUS WORK . . 5.0 REGIONAL GEOLOGY 7 6.0 PROPERTY GEOLOGY AND MINERALIZATION . . . 7.0 9 10 8.0 TRENCHING . . . 12 DIAMOND DRILLING 9.0 - -13 10.0 DISCUSSION 11.0 CONCLUSIONS . . 14 15 11.0 RECOMMENDATIONS 16 12.0 PROPOSED BUDGET . . . 17 -REFERENCES 18 CERTIFICATE . . LIST OF FIGURES Figure 1 General Location Map 2a 2b Figure 2 Property Location Map 3a Figure 3 Claim Map Figure 4 Property Geology 9a Figure 5 Trench Location Map 10a Figure 6 Trench and Diamond Drill Hole Location Map 10b iii

Reliance Geological Services Inc. —

1.0 <u>INTRODUCTION</u>

This report was prepared at the request of BGM Diversified Energy Inc to summarize work done on the Okey property (formerly Copper-Keays) in the Fort Nelson area of northeast British Columbia.

Previous work, geology, and geochemistry are described, and recommendations are made for further work. This report is based on published and unpublished literature.

2.0 LOCATION, ACCESS and PHYSIOGRAPHY

The Okey claim is located approximately 170 kilometers westsouthwest of Fort Nelson, B.C. (Figures 1 and 2).

The claim is found on Map Sheet NTS 94K/12, at latitude 58° 33' North, longitude 125° 32' West, and between UTM 6491500 m and 6493300 m North, and UTM 351000 m and 353500 m East.

Road access is from Mile 442 on the Alaska Highway. A dirt road leads south along the Toad River and Yedhe Creek for approximately 37 km to the central claim area. The road may be washed out in places and cannot be assumed passable at this time.-Alternative access is by helicopter from Fort Nelson.

The property is on moderate to steep terrain above treeline, with elevations from 5300 ft (1615 meters) to 7800 ft (2377 meters).

Climate is variable with higher elevations receiving precipitation almost daily during the summer. Winters are cold with approximately 60 cm of snow that stays from September to May. Recommended work season is mid-June to mid-September.

3.0 PROPERTY STATUS

The property consists of 1 claim totalling 20 units (Figure 3) in the Liard Mining Division. The claims are owned 100% by Donald A. Simon. BGM Diversified Energy Inc. has an option to earn a 100% interest.

Details of the claims are as follows:

Claim	Record Number	Units	Record Date	Expiry Date
Okey	324922	20	17 Apr 1994	17 Apr 1996

The total area covered by the claim is 500 hectares, or 1235 acres.

The writer is not aware of any particular environmental, political, or regulatory problems that would adversely affect mineral exploration and development on the Okey property.





4.0 <u>AREA HISTORY</u>

During the 1940's, copper was discovered in the area while the Alaska Highway was being built. Exploration activity took place during the 1950's and early 1960's, but was most active during the late 1960's and early 1970's. The two main deposits in the area were the Davis Keays (Eagle Vein) and the Churchill Copper deposit (Magnum Vein). Other significant copper vein occurrences included the Copper Keay (Neil Vein) and Fort Reliance (Reliance Vein).

From 1967 to 1969, Churchill Copper Corporation conducted drilling at 100 ft centres and some cross-cutting and raising on the Magnum vein, located 9 kilometers southeast of the Okey property. Proven and probable reserves totalling 1,178,000 tons of 3.92% copper were delineated. The mine produced from 1970-1974, milling 598,000 tons of copper ore grading 3.00% copper. The property was later acquired by Teck Corporation.

Between 1967 and 1972, the Davis Keays Mining Company conducted underground development on the Eagle vein, including over 4800 meters of drifting and cross-cutting, 1220 meters of sub-levels, and 1220 meters of raising. The vein was mapped and chip sampled at 3.0 meter intervals. In 1970, MacDonald Consultants Ltd completed a Feasibility Study, which was complemented a yearlater by an Evaluation Report done by Chapman, Wood & Griswold Ltd.



Results of their reserve calculations are as follows:

MacDonald Consultants

<u>Category</u>	Tons	<u> % Cu</u>
Proven	1,007,362	3.56
Probable	562,322	<u>3.18</u>
Sub-total	1,569,684	3.42
Possible	439,260	undetermined
Total	2,008,944	

Chapman, Wood & Griswold

Category	Tons	<u>% Cu</u>
Semi-proven	1,233,700	3.43
Probable		2.92
Sub-total	1,375,700	3.38
Possible	750,000	undetermined
Total	2,125,700	

Production was planned but never commenced, due to adverse economic and political conditions in the mid-1970's.

On the Reliance vein, located 11 kilometers west of the Okey property, surface grades of chalcopyrite/malachite mineralization were reported to be 6.0% Cu over 2.4 m. Sixteen holes were diamond drilled in 1958-59. Reserves reported by Churchill Copper in 1966 were proven/probable of 127,000 tonnes grading 5.5% Cu, and possible of 109,000 tonnes of similar grade.

5.0 PREVIOUS WORK

Between 1970 and 1972, the Copper Keays property was explored by Alberta Copper and Resources Ltd, and the Copper Keays Mining Co.

In 1970, work consisted of 25 kilometers of road building, 360 meters of trenching, and 1053 m^2 of stripping (G.E.M. 1970).

In 1971, work consisted of 47 kilometers of road building, geological mapping, 520 meters of trenching, and 2875 m^2 of stripping (G.E.M. 1971).

In 1972, work consisted of diamond drilling seven holes totalling 680 meters (G.E.M. 1972).

Underground drifting along the Neil vein was planned, but never commenced due to poor economic and political conditions during the mid-1970's.

6.0 <u>REGIONAL GEOLOGY</u> (taken from Chapman et al, 1971)

"The Davis-Keays (or Copper-Keays) property lies within the eastern edge of the Rocky Mountains in an area of rugged topography. Excellent exposures exist above timberline revealing flat to locally contorted sedimentary rock formations dislocated by extensive regional faulting.

Proterozoic argillites, guartzites, and limestones contain all the known copper deposits, possess generally low dips, are intruded by post-ore diabase dykes of Proterozoic age, and are overlain by unmineralized Palaeozoic formations of Cambrian and later ages. The Proterozoic strata occupy nearly the full width (40-50 miles) of the Rocky Mountains in the south part of the area. Northward they become separated into a north-trending eastern belt (mainly east of upper MacDonald Creek) and wider central and western belts which trend northwest and reach the Alaska Highway west of about Mile 436. The eastern and central belts join in the vicinity of Wokkpash Lake and neither is known to extend at surface north of the Alaska Highway. The Proterozoic strata are bounded partly by northwesterly-trending steep faults and elsewhere by overlaps of the Palaeozoic formations, which occur mainly in downwarps of the Precambrian surface but are also present as outliers on the mountaintops within the Proterozoic belts.

The presently known quartz-carbonate veins, many of which contain chalcopyrite, occur mainly in the western half of the Precambrian with a more or less similar distribution to the subsequent diabase dykes.

The dykes cut the veins and are themselves only weakly

mineralized on fractures containing carbonates (principally calcite) and quartz. In places dykes are more strongly mineralized by barren pyrite.

Veins may be much less numerous than dykes, many of which are discernible at a distance on the hill slopes. Dykes and veins generally have more or less similar attitudes, which are relatively constant in certain zones, belts, or parts of the area. Dykes and veins probably occur in, and may be virtually restricted to, these so-called mineral belts.

The best recognized to date is a belt approximately 6 miles wide and 40 miles long that trends north 35 degrees west and contains, from north to south, the known copper deposits of the Davis-Keays, Magnum, John, Lady, Churchill Creek, Ed, and Anne properties.

This belt, which is further marked by a pattern of sporadically developed northwest-trending asymmetric folds with steep east limbs and by the occurrence within it of a huge local pile of Cambrian conglomerate that forms Mt. Roosevelt, contains dykes and veins that mostly strike east of north and possess steep westerly dips.

Most of the known mineralized veins of the region havestrikingly similar mineral composition and structural characteristics."

7.0 **PROPERTY GEOLOGY and MINERALIZATION** (Figure 4)

The geology of the Okey property consists of a sedimentary sequence belonging to the Precambrian Aida formation. The main rock types include southwest dipping dark grey shale, and buff to orange weathering dolomite. Sediments are cut by numerous, northeast trending diabase dykes that range in width from a few meters to approximately 100 meters.

The main diabase dyke strikes at 050° and varies from 2 to 12 meters in width. The dyke is fine-grained and locally serpentinized. A shear zone is associated, extending in places for over 3 meters away from the dyke.

The Neil vein has been explored by trenching and limited drilling over a strike length of 1190 meters, and a vertical extent of 580 meters. The vein strikes at 050° and dips vertically. Widths vary from a few centimeters to over 3.5 meters, but average 1.0 to 1.5 meters.

Mineralization is within a shear zone parallel to the main diabase dyke. A quartz-carbonate vein is infilled with semimassive to locally massive chalcopyrite and lesser amounts of malachite and azurite.

At the northeast end of the Neil vein, the structure expands into a breccia zone. The zone is approximately 7.5 meters wide, strikes at 080°, and has been traced over at least 60 meters. Angular black dolomite fragments of variable size are surrounded by quartz and ankerite. Chalcopyrite is disseminated in quartz in aggregates up to 3 millimeters.

8.0 <u>TRENCHING</u>

Haferdahl (1971) reported on sampling from six trenches on the Neil Vein (Figure 5).

Location	Туре	Width (m)	Copper (%)
Trench 1	chip-vein	1.1	0.22
Trench 1	chip-vein	1.1	0.08
Trench 2	chip-vein	1.0	0.05
Trench 2	chip-vein	1.0	0.03
Trench 2	chip-vein	1.0	0.07
Trench 2	chip-vein	1.0	0.30
Trench 2	chip-vein	0.5	0.09
Trench 2	chip-breccia	1.0	1.15
Trench 2	chip-breccia	1.0	3.67
Trench 3	chip-vein	1.2	1.01
Trench 3	chip-vein	1.2	1.80
Trench 4	chip-shear-vein	1.0	0.06
Trench 4	chip-shear-vein	1.0	2.79
Trench 4	chip-shear-vein	1.0	0.44
Trench 6	chip-shear-vein	1.0	0.64
Trench 6	chip-shear-vein	1.0	0.02
Trench 6	chip-shear-vein	2.1	2.23
Trench 6	chip-shear-vein	2.7	0.16

Results are as follows:

Breccia Zone samples from trench 2 averaged 2.4% Cu over 2.0 meters. Haferdahl reported that chip samples collected in 1969 from elsewhere in the Breccia Zone "contained more than 4.5% Cu."



Burton (1990) reported on additional trench sampling supervised by R.S. Adamson, P.Eng. in the early 1970's (Figure 6).

Туре	Width	Copper
	(10)	(*)
Chip-vein	3.7	3.90
Chip-vein	1.4	13.00
Chip-vein	1.2	0.84
Chip-vein	1.0	4.70
Chip-vein	1.4	2.40
Chip-vein	1.4	5.80
Chip-vein	1.5	6.50
Chip-breccia	1.8	6.00
Chip-breccia	3.0	10.20
Chip-breccia	2.4	7.00
Chip-breccia	6.6	5.00
Chip-breccia	7.0	4.80

Results are as follows:

The last two samples appear to have been collected from the same site.

The Breccia Zone chip samples were collected discontinuously over a width of at least 30 meters.





9.0 <u>DIAMOND DRILLING</u> (Figure 6)

The writer has not reviewed any drill hole logs or analytical certificates.

Burton (1990) summarized drill results from the seven holes, and reported that 5 out of 7 holes intersected the vein. Core recovery in the vein averaged 55%.

Significant results are as follows:

Width (m)	Copper (%)	Recovery (%)
1.0	1.72	50
2.4	1.56	75
1.5	3.44	40
1.2	0.38	37
0.6	2.00	75
	Width (m) 1.0 2.4 1.5 1.2 0.6	WidthCopper (%)1.01.722.41.561.53.441.20.380.62.00

10.0 DISCUSSION

The Okey (formerly Copper-Keays) property is a high grade vein type copper occurrence that would require underground mining methods.

The Neil vein has been traced over a length of at least 1190 meters before it was obscured by overburden. Values from trench sampling have outlined potential economic grades in copper over mineable widths. Limited drilling with poor core recovery intersected the structure in five of seven drill holes. The vein remains to be explored along strike and at depth.

The Breccia Zone at the northeast end of the Neil vein appears to represent the intersection of two shear zones. Individual samples have assayed up to 10.20% Cu and widths up to 7.0 meters. The Breccia Zone has a potential width of at least 30 meters and therefore is a high priority for follow-up work.

11.0 <u>CONCLUSIONS</u>

The Okey property has good potential to host an economic vein type copper deposit for the following reasons:

- other vein-type copper deposits in the area reached the production or pre-production stage;
- the Neil vein hosts potentially economic copper grades over mineable widths;
- the breccia zone hosts high grade copper values that locally are at least 30 meters wide.

11.0 <u>RECOMMENDATIONS</u>

- a) Establish approximately 50 line kilometers of grid;
- b) Geologically map and rock sample on the grid;
- c) Hand trench at regular intervals and chip sample along the Neil vein and Breccia Zone;
- d) Conduct a magnetic and VLF-EM survey to identify possible mineralized structures buried by overburden.

Contingent upon favorable results, the follow-up program would consist of diamond drilling to test mineralized structures at depth.

12.0 PROPOSED BUDGET

\$ 1,000 Project Preparation \$ 13,000 Mobilization Field Crew (2 geologists, 2 geotechnicians; 2 weeks) \$ 14,980 Field Costs (including helicopter) \$ 31,860 . \$ 1,250 Analysis \$ 10,000 Magnetic/VLF-EM Survey \$ 2,500 Report \$ 7,410 Administration 7% GST \$ 6,000

Total

W. G. SIVERTZ BRITISH CIEN

\$ 88,000

15

REFERENCES

Archer, Cathro, and Associates, (1981): Northern B.C. Mineral Inventory, Davis-Keay Prospect, ID# 94K 12, 13, 14, 15, 16, 17, 55, 56. Burton, A. (1990): Report on the Neil Vein, Ram Creek Property, for Great Central Mines Ltd. Campbell, D.D., (1976): Geological and Topographic Report on the Yedhe Creek Property of Davis Keays Mines Ltd., Ass. Rpt. 2388 Chapman, Wood, and Griswold, (1971): Evaluation Report on the Property of Davis-Keays Mining Co. Ltd., Liard M.D., B.C. Geology, Exploration and Mining in British Columbia: Bob, Rim, Mad Claims; 1970, p. 42; 1972, p.492 Haferdahl, L.B., and Van Dyck, G.A., (1971): 1971 Exploration of the Ram Creek Property, Ass.Rpt. 3420 MacDonald Consultants, (1970): Feasibility Report on the Davis Keays Project for Davis-Keays Mining Co. Ltd.

Preto, V.A., (1971): Bob, Rim, Mad, Geology, Exploration, and Mining in British Columbia, 1971, p. 78-81

CERTIFICATE

I, GEORGE W.G. SIVERTZ, of 11708 - 246th Street, Maple Ridge, B.C., V4R 1K8, do hereby state that:

- 1. I received a B.Sc. (Honours) degree in Geology from the University of British Columbia in 1976.
- 2. I am registered as a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.
- 3. I have pursued my career as a geologist for eighteen years in Canada, the United States, and Mexico.
- 4. This report is based on published and unpublished literature provided to me by Reliance Geological Services Inc. I have not visited the subject property.
- 5. I have no interest, direct or indirect, in the properties or securities of BGM Diversified Energy Inc., nor do I expect to receive any.
- 6. I consent to the use of this report, only in its entirety, in a Prospectus or Statement of Material Facts for the purpose of private or public financing.



Dated at North Vancouver, B.C., this 3rd day of May 1995.

17

Reliance Geological Services Inc. -