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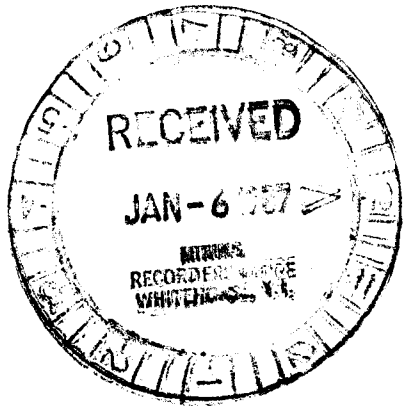

# REPORT ON GEOLOGICAL MAPPING AND GEOCHEMICAL AND GEOPHYSICAL SURVEYS

done on the

GOLDSTAR PROPERTY

(Augusta; Margareta; Gold Star;
Peerless; Protection Fr;
Shear Zone 1-2; Vindicator 1-2;
Liberty; Excelsior 1-3; Progress 1-2;
Greenstone 1-5,6F,7-10; Goldstar Fr;
Rick 1-23; Cabage 1-11, 13-14, 17-24)

located at

Latitude 62°17'N; Longitude 137°09'W

on

NTS 115I/6

between

June 18 and July 17, 1986

W.D. Eaton, B.A., B.Sc.

December 1, 1986

091896

BOX 4127, 3125 THIRD AVENUE, WHITEHORSE, Y. T. Y1A 3S9

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## INTRODUCTION

Chevron Minerals Ltd. optioned 70 claims (collectively called the Goldstar property) from G. Harris and E. Wienecke in the spring of 1986 and assigned them to Freegold Venture (FV). The 1986 field program was conducted in late June and July and included geological mapping, prospecting, grid soil geochemistry and test EM-16 surveys. The work was supervised by the author, whose Statement of Qualifications appears in Appendix I, and done by a three- to five-man crew whose names and addresses are listed in Appendix II.

## PROPERTY, LOCATION AND ACCESS

The property consists of 67 full and 3 fractional claims that are registered in the name of Chevron Minerals Ltd. with the Whitehorse Mining Recorder as follows:

| CLAIM NAME | GRANT NUMBERS | EXPIRY DATE |
|---|---|---|
| Augusta | 15494 | December 12, 1987 |
| Margareta | 15505 | December 12, 1987 |
| Gold Star | 15519 | December 12, 1987 |
| Peerless | 15549 | December 12, 1987 |
| Protection Fr | 15677 | December 12, 1987 |
| Shear Zone 1-2 | 60420-60421 | December 12, 1987 |
| Vindicator 1-2 | 60422-60423 | December 12, 1987 |
| Liberty | 63638 | December 12, 1987 |
| Excelsior 1-3 | 63639-63641 | December 12, 1987 |
| Progress 1-2 | 73464-73465 | December 12, 1987 |
| Goldstar Fr | Y80600 | December 12, 1987 |
| Greenstone 1-4 | 90465-90468 | December 12, 1987 |
| 5 | 91056 | December 12, 1987 |
| 6F | Y21094 | December 12, 1987 |
| 7-9 | YA92778-YA92780 | January 29, 1989 |
| 10 | YA92869 | January 29, 1989 |
| Rick 1-14 | YA92082-YA92095 | June 24, 1987 |
| 15-23 | YA92748-YA92756 | January 29, 1989 |
| Cabage 1-11 | YA92757-YA92767 | January 29, 1989 |
| 13-14 | YA92768-YA92769 | January 29, 1989 |
| 17-24 | YA92770-YA92777 | January 29, 1989 |

The claims are located 53 km northwest of Carmacks on NTS map sheet 115I/6 at latitude 62°17' and longitude 137°09'W. Direct access is available during the summer and fall using the Yukon Territorial Government maintained Freegold Road and 4-wheel drive bush trails maintained by local placer miners.

## HISTORY AND PREVIOUS WORK

Gold-bearing magnetite was discovered near the summit of Mt. Freegold on what is now the Goldstar property by F. Guder in 1930. A small staking rush occurred in the spring of 1931 but few of the claims were systematically worked and most were allowed to lapse. In 1959, Conwest optioned Guder's claims and drilled five diamond drill holes totalling 309 m. Recoveries were poor but four intervals returned significant assays, averaging 0.14 oz/ton Au over 2.1 m.

During 1965-66, Ormsby Mines Ltd. mined a high grade precious metal-bearing quartz vein and operated a 125 ton per day mill on the adjacent LaForma property. The operation was abandoned in early 1966 due to excessive dilution and poor recovery.

In 1969, Yukon Revenue ML optioned Guder's claims and performed bulldozer trenching and geological mapping. This work outlined an intensely bleached zone (Cabin Zone) on the south slope of Mt. Freegold but precious metal values were low. In 1973, Prism Res L optioned the core of the Goldstar property, staked additional fringe claims and conducted geological mapping and a ground magnetic survey. Prism transferred the option to Dynasty EL in early 1974 and the following field season Dynasty performed detailed geological mapping, linecutting, soil geochemistry, a magnetometer survey, bulldozer trenching and 8 diamond drill holes totalling 653 m. Results were mixed and the claims reverted to F. Guder who reoptioned them to Arctic Red Res Corp from 1980 to 1982. Following Guder's death in 1982, the claims were transferred to Guder Mg EL (controlled by E. Wienecke) which performed bulldozer trenching in 1982 and 1983. Some of the fringe claims on the south side of the property lapsed in early 1984 and were restaked in June 1984 by D. Dodge and again in July 1985 by G. Harris.

## PHYSIOGRAPHY AND GEOMORPHOLOGY

The property covers the summit of Mt. Freegold and a broad, rounded ridge extending west from it. Seymour Creek marks the southern boundary of the property while Stoddart Creek forms the northern boundary. Local elevations range from 1450 m at the summit to 790 m on the valley floors. Soils are locally derived except for a 2000 year old, up to 30 cm thick, volcanic ash layer that lies immediately below the organics. South- and east-facing slopes are generally steep and well drained with 0 to 3 cm of A horizon organics, 0 to 20 cm of ash, 10 to 30 cm of B horizon soil and greater than 100 cm of C horizon decomposed bedrock. North- and west-facing slopes are gentle and permanently frozen with 10 to 30 cm of A horizon organics, 0 to 30 cm of ash, 10 to 30 cm of B horizon soil and over 100 cm of C horizon decomposed bedrock.

Most of the property is below treeline and typical vegetation consists of spruce, poplar and grasses on south- and east-facing slopes with stunted black spruce and thick moss on north- and west-facing slopes.

## GEOLOGY

The Goldstar property is situated within the Yukon Crystalline Terrane which consists of Paleozoic or older metamorphic basement rocks that are intruded and overlain by a variety of igneous rocks related to the Coast Plutonic Complex. Property geology is shown on Figure G-1 in the pocket.

The basement schists, gneisses, quartzites and marbles are exposed in a broad band in the central and western portion of the property. Limy units are often altered to calc-silicate minerals and form narrow magnetite-rich skarn horizons.

The oldest igneous rocks are the Jurassic Big Creek syenites which are seen as scattered outcrops in the central portion of the property. This unit contains orthoclase phenocrysts up to 3 cm in length that are crudely aligned in a northwest direction. The matrix consists of medium- to coarse-grained, black hornblende with finer-grained orthoclase and plagioclase. These rocks are relatively unaltered.

The second igneous unit is Mid-Cretaceous hornblende-biotite granodiorite that outcrops primarily on the southern slopes of Mt. Freegold. Alteration of this unit ranges from weak quartz and epidote veining on fractures to locally intense kaolinization.

The youngest intrusions are widely distributed, grey to cream coloured quartz-feldspar porphyry dykes that vary from a few centimetres to 15 m in width. Several are easily traceable over strike lengths of 200 to 300 metres. Some of the dykes are strongly argillically altered but most are relatively fresh.

## MINERALIZATION

Precious metal mineralization occurs in elongate east-west trending magnetite-rich skarns and narrow quartz veins within and adjacent to porphyry dykes, as shown on Figure G-1 in the pocket.

F. Guder, in the early 1930's, traced the Augusta Zone magnetite skarn through a series of hand pits and trenches for a strike length of 100 m. Magnetic surveys and a series of later bulldozer trenches have traced the magnetite for a strike length of at least 1000 m. The near vertical, west-trending magnetite body appears to have formed through skarnification of limy beds in quartz-chlorite gneiss and amphibolite. The skarns consist of 40 to 70% magnetite with lesser chlorite, epidote, quartz, limonite, actinolite and garnet plus minor specular hematite, pyrite, chalcopyrite and native gold. Gold mineralization is strongest in the eastern portion of the zone where trench samples returned up to 0.89 oz/ton Au over 1.4 m. Only the 1959 Conwest drill holes tested this zone and they produced four intervals that averaged 0.14 oz/ton Au over 2.1 m.

Using surface assays obtained from the 1974 bulldozer trenches, geological reserves for the Augusta Zone are estimated to be 78,000 tons grading 0.12 oz/ton Au with 3.03 oz/ton Ag to a depth of 20 m with a waste to ore ratio of about 10 to 1.

The Margareta Zone parallels the Augusta Zone 100 m to the south and is a near vertical, east-west striking swarm of irregular quartz veinlets associated with a narrow, argillically altered quartz feldspar porphyry dyke. The zone lacks sharp boundaries and is between 0.5 and 2.0 m wide. Previous workers report gold values as high as 60 oz/ton from hand specimens taken from

an old dump beside a shallow shaft dug by Guder near the discovery outcrop. Samples from two hand trenches 45 and 30 m east of the shaft assay 2.6 oz/ton Au with 10.6 oz/ton Ag over 45 cm and 4.46 oz/ton Au with 19.4 oz/ton Ag over 30 cm, respectively. Samples from bulldozer trenches returned up to 1.22 oz/ton Au with 25.82 oz/ton Ag over 1.13 m, while drilling yielded intersections grading up to 0.13 oz/ton Au with 1.16 oz/ton Ag over 1.21 m. The quartz veins contain pyrite, chalcopyrite with minor arsenopyrite, but at surface nearly all sulphides have been oxidized leaving limonite and minor malachite in boxworks and on fractures. Drilling indicates that the rocks are strongly oxidized to a depth of greater than 60 m.

Using 1974 trench sample results and assuming a mining depth of 20 m, geological reserves for the Margareta Zone are estimated to be 101,000 tons grading 0.11 oz/ton Au and 1.97 oz/ton Ag with a waste to ore ratio of approximately 10 to 1.

The Vindicator Zone is located 1000 m west along strike from the Margareta Zone. Old bulldozer trenches in the area did not reach bedrock and exposure is limited to one small outcrop which returned 0.11 oz/ton Au and 18.05 oz/ton Ag over 1.22 m. A specimen of limonite stained quartz vein float collected nearby assayed 0.112 oz/ton Au.

## GEOCHEMISTRY

Four baselines (called A,B,D and E) totalling 12.7 kms were established at an orientation of 030° and 1986 soil samples were collected at 50 m intervals on compass and topofil controlled lines spaced 100 m apart. The baselines are marked by 1 m wooden lath every 100 m while sample locations are indicated by 0.5 m lath bearing aluminium tags inscribed with the sample number and grid coordinates. Even numbered samples were sent to Chemex Labs of North Vancouver where they were dry sieved through a -35 mesh screen and ring pulverized to approximately -100 mesh before being analyzed for gold by neutron activation. Three hundred and fifty-nine of the remaining 943 odd numbered samples were later analyzed to provide greater detail in selected areas of interest.

The results are plotted on Figure G-2 in the pocket and contouring has outlined several anomalous clusters, the strongest of which lies on the extreme west-central portion of the property. The anomaly is in the vicinity of the Vindicator Zone and probably represents an extension of the Margareta Zone.

A second strong anomaly is located on the east flank of Mt. Freegold where a wide, brecciated porphyry dyke intrudes along a contact between altered granodiorite and metamorphic rocks. Aside from a few wide spaced hand trenches, this target is untested.

Other anomalous clusters are scattered across the property but generally lack continuity and intensity. Surprisingly, soil geochemical response directly over and adjacent to the Augusta and Margareta Zones is weak and all but a few samples returned background values even though sampling conditions are good.

## GEOPHYSICS

A test Ronka EM-16 survey was conducted on the property during late July. However, the work was of little value as the Seattle transmitter was shut down for unscheduled maintenance during the test period and the signal from the other crystal (Hawaii station) is at a poor angle to the east-west trending mineralized structures and did not outline any conductors.

## CONCLUSIONS

Although the Goldstar property exhibits modest geological reserves of medium grade, open-pittable oxidized ore in two zones (Augusta and Margareta), there is little potential for a sizeable bulk tonnage gold deposit. Relatively untested mineralization and soil geochemical targets along strike from these zones may increase reserves but they will likely be confined to similar, well mineralized but narrow structures.

The most favourable bulk tonnage target is the soil geochemical anomaly associated with a brecciated feldspar porphyry dyke near the summit of Mt. Freegold. Similar rocks host disseminated and stockwork mineralization at the Antoniuk deposit (drill indicated 4 million tons grading 0.033 oz/ton Au) 2 km to the east; however, the soil geochemical response over that deposit is much more intense.

If a deposit is brought into production elsewhere on Mt. Freegold, the Goldstar property might contribute some ore but it is unlikely that the Goldstar mineralization could be developed on its own.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

W.D. Eaton, B.A., B.Sc.

FREEGOLD VENTURE

L. LEBEDOFF

R. GRANGER (opt to DURHAM RES L)

G. HARRIS

UNSTAKED

GUDER MINES

NORDAC Mg CORP. & PERMIAN RES

DISCOVERY MINES

STODDART CREEK

CABIN GULCH

SEYMOUR CREEK

CARIBOU CREEK

PORCUPINE GULCH

MAJOR GULCH

FORREST GULCH

VINDICATOR SHOWING

MARGARETA ZONE

CABIN ZONE

AUGUSTA ZONE

PAULINE LEPAGE

MOUNT FREEGOLD

4766'

Goldstar property boundary

137°10'

62°18'

62°17'

4100

4000

4500

3500

3000

2500

mKgd

mKqfp

Psn

Jy

A

B

C

D

E

LOCATION MAP

SCALE - 1:2,000,000

YUKON

GOLDSTAR

Minto

Carmacks

Klondike

Stewart

Pelly

Yukon

Nisutlin

Teslin

Kluane

Aishihik Lake

Kloo L.

Teslin Lake

Laberge

Haines Junction

WHITEHORSE

Dezadeash Lake

Morley Lake

Geological contact known, assumed

Fault

Road

Bulldozer trench

Hand trench or shallow bulldozer trench

Trail

Diamond drill hole

Shaft

Placer operation

Vein zone

Claim post

Shear zone

Outcrop

mKqfp Middle Cretaceous quartz feldspar porphyry

mKgd Middle Cretaceous granodiorite

Jy Jurassic syenite

Psn Paleozoic or older metamorphic rocks

0.112 Grab sample with gold value in opt

0.15/3.51 1.83m Au/Ag values in oz/ton with width in metres (Dynasty 1974)

Figure G-1

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

# GEOLOGY

## GOLDSTAR PROPERTY

## FREEGOLD VENTURE

091896

SCALE 1:5000

0 50 100 200 300 400 500 Metres

0 100 500 1000 1500 Feet

To accompany report dated December 1986

FREEGOLD VENTURE

L. LEBEDOFF

R. GRANGER ( opt to DURHAM RES L )

G. HARRIS

UNSTAKED

GUDER MINES

UNSTAKED

UNSTAKED

UNSTAKED

UNSTAKED

DISCOVERY MINES

NORDAC Mg CORP & PERMIAN RES

PAULINE LEPAGE

MOUNT FREEGOLD

4766

STODDART CREEK

SEYMOUR CREEK

L.A.

L.B.

L.C.

L.D.

L.E.

62°18'

62°17'

137°10'

4100

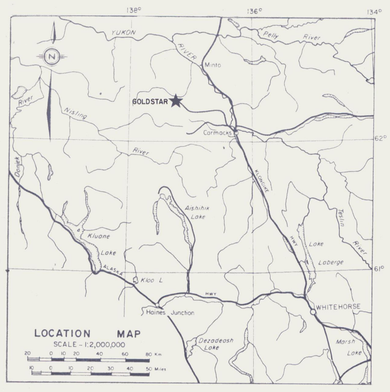
4000

4500

3500

3000

2500




·15 Soil sample location with Au values in ppb

Property boundary

≥ 25 < 50

≥ 50 < 100

≥ 100

Road

Trail

Bulldozer trench

Hand trench or shallow bulldozer trench

Placer operation

Dec 10/86

Figure G-2

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

# GOLD GEOCHEMISTRY

## GOLDSTAR PROPERTY

091896

FREEGOLD VENTURE

SCALE 1:5000

0 50 100 200 300 400 500 Metres

0 100 500 1000 1500 Feet

To accompany report dated December 1986

# APPENDIX I

# STATEMENT OF QUALIFICATIONS

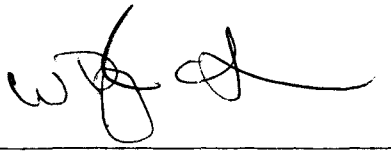
# STATEMENT OF QUALIFICATIONS

I, W. Douglas Eaton, geologist, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia, and residential address in Burnaby, British Columbia, do hereby declare:

1. I graduated from the University of British Columbia in 1980 with a B.Sc.

2. From 1971 to the present, I have been actively engaged in mineral exploration in British Columbia and Yukon Territory and on June 1, 1981, became a partner in Archer, Cathro & Associates (1981) Limited.

3. I have personally participated in or supervised the field work reported herein and have interpreted all data resulting from this work.



W. Douglas Eaton, B.A., B.Sc.

# APPENDIX II

# LIST OF EMPLOYEES

## LIST OF EMPLOYEES

| | |
|---|---|
| D. Eaton | 6108 Burns Street, Burnaby, B.C. |
| M. Walls | 5770 McKinnon, Vancouver |
| T. Becker | #11 - 11031-88th Avenue, Edmonton |
| D. Kohlhaas | c/o 311-922.5 Alaska Highway, Whitehorse, Yukon |
| J. Gnucci | 520-7th Street South, Cranbrook, B.C. |
| T. Knight | R.R. #2, Canyonview, Summerland, B.C. |
| D. Hrycun | 14703-87 Street, Edmonton, Alberta |
| J. Dennett | 5679 Kings Road, Vancouver |
| D. Lister | 2355 West 6th Avenue, Vancouver |