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A Review of the Gold Potential
of the THOR, NIV, DEW, MOOSE,
FRED, RED, CARR and COMB claims

Omineca Mining Division, British Columbia

NTS 94 / D

Report for

Gunsteel Resources Inc.

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Table of Contents

Summary.....1

Conclusions.....2

Recommendations.....2

Estimated costs of Recommendations.....4

Introduction.....6

Location, Access, Physiography.....6

Claim Data.....7

General Geology8

Assessment of the Gunsteel claims and their
gold potential.....11

Sources of Information.....17

Statement of Qualifications and Release.....18

SUMMARY

Gunsteel Resources Inc. holds 768 claim units in eight groups in the Omineca Mining Division of British Columbia. These are named THOR 1-17, NIV 1-8, DEW 1-8, MOOSE 1, FRED 1-2, RED 1-2, CARR 1, and COMB 1-2. Gunsteel has an agreement with Asitka Resource Corp., which allows Asitka to earn a 50% interest in the Gunsteel claims. Expenditures are to be shared equally.

Falconbridge Limited has 636 of these claim units under option in four groups. These are the THOR 1-17, NIV 1-8, DEW 1-8, and MOOSE 1 claims. To the end of November of 1984, Falconbridge had spent \$194,856.67 on the claims. Falconbridge can earn a 60% interest in these claims, if it spends \$350,000 before December 31, 1985.

Sustut Peak is at about the centre of the area within which the claims lie, and this is about 200 km northnortheast of Smithers, B.C. The area can be reached by air or road. Within the area the claims can be reached by helicopter from Johanson Lake. The THOR claims may soon be accessible by road.

Gunsteel staked the claims in 1983 and 1984 to cover anomalous gold values in stream sediments, which the company found during a 1983 regional sampling program over Sustut Basin. The claims cover Permian to Tertiary sedimentary, volcanic, and intrusive rocks, and post-glacial outwash in the valleys.

In 1984 Falconbridge examined the claims it has under option for paleoplacer and hydrothermal gold, and found to 1000 ppb in a Cretaceous-Tertiary conglomerate of the Sustut Group, and to 3200 ppb in gossans over shear zones in Takla volcanics.

CONCLUSIONS

The Gunsteel claims are underlain by rocks of various ages. In order of increasing age these are:

6. glacial and post-glacial outwash,
5. porphyritic intrusions of Tertiary age,
4. conglomerates, sandstones, shales, tuffs of the Cretaceous-Tertiary Sustut Group,
3. granitic rocks of Jurassic-Cretaceous age, belonging to the Omineca intrusions,
2. andesitic lavas, tuffs, conglomerates, sandstones, and shales of the Jurassic Takla and Hazelton groups,
1. acid to intermediate lavas, tuffs, and mixed sediments of the late-Paleozoic Asitka Group.

The many rock types, ages, structural settings, suggest that several types of gold deposits may have caused the stream sediment anomalies. Gold may occur in:

1. post-glacial placers in deep gravels of the present drainage, similar to those at McConnell Creek,
2. hydrothermal gold in veins in volcanic rocks, and in contact zones of intrusive rocks,
3. paleoplacers in Sustut Group conglomerates.

The greatest potential has to be for paleoplacer gold in Sustut Group fluvial conglomerates.

RECOMMENDATIONS

A two year, three phase exploration program is recommended to examine the claims for their gold potential.

Phase I

This will be preliminary work in 1985 on the FRED, RED, CARR, and COMB claims, held 50% by Gunsteel Resources Inc. and 50% by Asitka Resource Corp. The work will consist of mapping, prospecting, and sampling. Phase I is expected to cost about \$72,000. Gunsteel's 50% contribution to this will be \$36,000.

Phase II

This will consist of follow-up work in 1986 on the FRED, RED, CARR, and COMB claims, and will include detailed mapping, and possibly drilling. Phase II is expected to cost about \$130,000. Gunsteel's contribution to this will be \$65,000.

Phase III

This assumes that Falconbridge Limited will earn a 60% interest in the THOR, NIV, DEW, and MOOSE claims, and will want to spend \$600,000 on a drill program in 1986. Gunsteel's 20% contribution to this will be \$120,000.

Total funds needed by Gunsteel Resources Inc. to carry out this work will be \$221,000.

ESTIMATED COSTS OF RECOMMENDATIONS

PHASE I - 1985

This will consist of mapping, prospecting, and sampling. A two man crew will spend about 10 days on each of the FRED, RED, CARR, and COMB claim groups.

Geologist, two months, at \$5,000/m	\$10,000
Assistant, two months, at \$3,000/m	6,000
Room and Board, 120 man days at \$35/d	4,200
Vehicle rental, to move personnel and gear to Johanson Lake	1,500
Six supply flights from Smithers at \$500/flight	3,000
Helicopter support, 25 hrs at \$600/hr	15,000
Rock assays, 100/mile ² , 800 total at \$12/sample	9,600
Silt assays, 20/mile ² , 320 total at \$12/sample	3,840
Equipment rentals, camp supplies	3,000
Supervision, consulting fees, reports	10,000
Contingencies	<u>5,860</u>
<u>TOTAL:</u>	<u>\$72,000</u>

PHASE II - 1986

This will consist of detailed follow-up work on the FRED, RED, CARR, and COMB claims plus drilling. Two men will be in the field for two months.

Geologist, two months, at \$5,000/m	\$10,000
Assistant, two months, at \$3,000/m	6,000
Room and Board, 120 man days at \$35/d	4,200
Vehicle rental	1,500
Seven supply flights from Smithers at \$500/flight	3,500
Helicopter support, 30 hrs at \$600/hr	18,000
Rock and DD core assays, 500 at \$12/sample	6,000

Phase II (contd.)

Supervision, consulting fees, reports	10,000
Diamond drilling, 600 m at \$100/m	60,000
Contingencies	<u>10,800</u>
<u>TOTAL:</u>	<u>\$130,000</u>

PHASE III - 1986

This assumes that in 1985 Falconbridge Limited will earn a 60 % interest in the THOR, NIV, DEW, and MOOSE claims, and will spend \$600,000 in 1986 on diamond drilling and other exploration. Gunsteel and Asitka's combined 40% share of this will be:

\$240,000

Grand TOTAL: \$442,000

Total funds needed by Gunsteel Resources Inc. to carry out these recommendations will be 50% of grand total:

\$221,000



W. Meyer



INTRODUCTION

The Gunsteel claims lie in an area of great mineral potential.

To the north is the Toodoggone gold camp, where gold occurs in quartz veins, quartz-amethyst breccias, skarns, stock works, porphyry systems, and siliceous shears. Several properties are currently being evaluated. The Baker Mine has in the past produced about 90,000 t grading 31 g Au/t, and 583 g Ag/t from a quartz vein.

Six km east of the THOR claims are the McConnell Creek gold and platinum placers in post-glacial gravels. 34.2 kg gold were won from these between 1931 and 1945.

Nine km northwest of Sustut Peak is a stratiform copper deposit, discovered by Falconbridge in the early 1970's. The deposit contains about 22,500,000 t of 1.25% Cu.

The Omineca Mine Road is to be extended northwest for 55 km from Moose Valley to the Sturdee airstrip. Work is expected to begin this summer. Improved access should further stimulate exploration in the area.

LOCATION, ACCESS, PHYSIOGRAPHY

Most of the claims lie in the east half of NTS 94 D, an area bounded by latitudes 56° N and 57° N, and longitudes 126° W and 127° W. Parts of the NIV claims lie in the west half of NTS 94 D. The centres of the eight claim groups lie about as follows:

THOR	56° 51' N; 126° 40' W
DEW	56° 45' N; 126° 45' W

NIV	56° 47' N; 126° 59' W
MOOSE	56° 48' N; 126° 45' W
FRED	56° 58' N; 126° 08' W
RED	56° 27' N; 126° 52' W
CARR	56° 13' N; 126° 26' W
COMB	56° 11' N; 126° 35' W

The area can be reached by wheel equipped aircraft to a gravel airstrip in Moose Valley at 56° 44' N and 126° 39' W, by float equipped aircraft to Johanson Lake, which is 34 km southeast of the Moose Valley airstrip, and by road along the Omineca Mine Road to Johanson Lake and the Moose Valley airstrip. If this road is extended to the Sturdee airstrip, it will pass through the THOR claims.

Within the area the claims can be reached by helicopter, which are usually based at Johanson Lake during the summer months. All claims lie within 50 km of Johanson Lake.

Elevations above sealevel vary from 760 m on Sustut River to 2469 m on Sustut Peak in the centre of the area. Treeline is at about 1500 m.

CLAIM DATA

The 768 Gunsteel claim units are in eight groups of various sizes, and lie within NTS 94 D. The approximate latitude and longitude of the centre of each group have been given above. Other claim data are as follows:

<u>Claim Name</u>	<u>Units</u>	<u>Record Numbers</u>	<u>Expiry Date</u>
THOR 1-17	340	5909 to 5925	Oct 17, 1986
DEW 1-6	112	5899 to 5904	Oct 17, 1986
DEW 7-8	24	6051 to 6052	Feb 23, 1987
NIV 1-4	80	5905 to 5908	Oct 17, 1986

NIV	5-8	62	6053 to 6056	Feb 23, 1987
MOOSE	1	18	6057	Feb 23, 1987
FRED	1-2	36		Feb 23, 1986
RED	1-2	40		Feb 23, 1986
CARR	1	20		Feb 23, 1986
COMB	1-2	36		Feb 23, 1986

The THOR 1-17, DEW 1-8, NIV 1-8, and MOOSE 1 claims are optioned to Falconbridge Limited. Falconbridge had spent \$194,856.67 to November 30, 1984. To earn a 60% interest in these claims, Falconbridge will have to spend \$350,000 by December 31, 1985.

GENERAL GEOLOGY

G. S. Lord mapped the east half of NTS 94 D in the 1940's, and published his work as G.S.C. Memoir 251, and Map 962A, McConnell Creek, on a scale of 1 : 253, 440 (1" = 4 miles). His map shows northnorthwest trending belts of volcanic, sedimentary, and intrusive rocks of Paleozoic to Tertiary age. Post-glacial debris fills the broad valleys.

In the late 1960's and early 1970's G. H. Eisbacher (1974) mapped the Sustut Group of upper Cretaceous to lower Tertiary age in Sustut Basin. Sustut Basin extends from the Spatzizi Plateau on Stikine River at 58° N to Takla Lake at about 55° 15' N, a distance of about 350 km. Outcrop width of Sustut Basin is up to 40 km.

The Sustut Group represents a late-orogenic clastic succession, which was deposited in Sustut Basin in response to mountain building to the east and west. Eisbacher recognized several older assemblages which either underlie Sustut rocks, or occur adjacent to them, or are present as clasts in Sustut Group conglomerates. They range in age from late-Proterozoic to

late-Jurassic. These need not be discussed further now, but will be briefly mentioned again later.

In discussing the economic potential of the area, Eisbacher suggested that basal conglomerates of the Sustut Group could contain fossil placer gold along the northeast margin of Sustut Basin. His detailed paleocurrent work showed that the debris for the lower Sustut Group came from the Omineca Mountains to the north and northeast. In this direction lies the Toodoggone gold camp. The Sustut Group therefore does have potential for paleoplacer gold.

Eisbacher (1974) divided the Sustut Group into two formations, and each of these into two informal members. The two formations are easily recognized as distinct units, but the

<u>Group</u>	<u>Formations</u>	<u>Members</u>
Sustut	Brothers Peak	Spatzizi
		Laslui
	Tango Creek	Tatlatui
		Niven

members grade into each other, so that the changeovers are not clearly marked. Yet, Eisbacher had sound reasons for the subdivisions; the members have different current directions.

The Tango Creek Formation rests unconformably on all older formations.

The Niven member is a sandstone-mudstone succession. Locally a polymictic basal conglomerate is present, which may be up to 100 m thick. The Niven member becomes finer upsection, although conglomerates occur throughout. Paleocurrent directions in the claim area are from east and northeast.

The Tatlatui member consists mostly of dark grey mudstones and some coarser beds. Paleocurrent directions are from the south.

The Brothers Peak Formation rests conformably to unconformably on the Tango Creek Formation.

The Laslui member consists of thick, coarse conglomerates with interbedded, very distinct ashfall tuffs. Current directions in the claim area are from north and northeast.

The Spatzizi member consists of pebbly sandstones, ashfall tuffs, and mudstones. Paleocurrent directions are from north and northwest.

The Tango Creek Formation varies from 300 to 900 m in thickness, and the Brothers Peak Formation from 500 to 1400 m.

The writer has traversed a nearly complete section of perhaps 700 m of the Tango Creek Formation on the NIV claims, and partial sections on Forrest Mountain, east and west of Thorne Lake on the THOR claims, and on the DEW claims. He also traversed the lower conglomerates of the Brothers Peak Formation on the NIV claims and on Forrest Mountain.

The Tango Creek Formation is marked by many upward fining fluvial cycles from sandstones to mudstones, or from conglomerates to sandstones to mudstones. The proportion of mudstones increases upsection, so that the formation as a whole becomes finer upsection. The clasts become smaller east to west, so that there is a facies change from proximal to distal in that direction. The stratigraphic succession superficially looks to be continuous, and Eisbacher's division into two members looks arbitrary. It is difficult to see why the two members should have different source areas.

The conglomerates are thick fluvial gravels that may be tens of metres thick. Most fill channels, but some have remarkable continuity and can be traced for several kilometres. They have the appearance of sheet gravels, and in this they resemble the areally extensive conglomerates of the Witwatersrand. However, Sustut conglomerates are texturally and compositionally quite immature. They are transgressive first cycle, whereas Witwatersrand conglomerates are multicycle regressive. Sustut Group clasts are rounded to subrounded, and are highly variable in size. The largest are about 30 cm in diameter. Composition of the conglomerates is also highly variable. Clasts consist of granitic rocks, mafic to intermediate volcanic rocks, wackes, cherts, quartzites, and vein quartz.

Eisbacher (1974) made a clast count of the conglomerates throughout the Sustut Group, and his bar charts suggest 3% to 18% vein quartz clasts. Conglomerates with a northerly and easterly source, off the Omineca Mountains, appear to have more vein quartz clasts than those with a more westerly or southerly source.

The high content of vein quartz clasts with a source in an area rich in gold bearing quartz veins, certainly makes the Sustut conglomerates attractive targets for paleoplacer gold exploration. Many Recent gold placers contain abundant vein quartz clasts. Eisbacher thought that the basal Tango Creek conglomerates have the best potential. Worldwide gold in Recent placers does occur at the base of gravels or on false bottoms (Boyle, 1979). However, in Sustut Group conglomerates the potential must also rank high for conglomerates higher in the stratigraphic succession, the high quartz clast content suggests that.

ASSESSMENT OF THE GUNSTEEL CLAIMS AND THEIR GOLD POTENTIAL

In 1983 Gunsteel Resources Inc. carried out a stream

sediment sampling program in creeks and rivers that drain Sustut Basin. This followed along Eisbacher's suggestions mentioned earlier, that Sustut Group conglomerates may contain paleoplacer gold.

Certificates of Analysis show that Gunsteel collected 389 silt samples between Stikine River and Bear Lake. Gold values range from 10 to 1320 ppb. Twentyfour samples contained more than 100 ppb gold, and most of these clustered in the Niven River and Moose Valley areas. This area is almost wholly underlain by Sustut Group rocks. Gunsteel found that gold in silt samples correlated poorly with Mo, Cu, Ni, Co, Mn, Ag, Zn, Pb, and As, except where underlain by Takla and Hazelton rocks. This suggested to Allen and MacQuarrie (1984) that gold had come from paleoplacers in the Sustut Group, not from hydrothermal veins, skarns, or porphyries.

In 1984 Falconbridge Limited carried out a program of mapping, detailed section measuring, and rock and silt sampling on the THOR, NIV, DEW, and MOOSE claims.

The THOR claims

Sustut Group rocks underlie the western 2/3 of the claims, but are poorly exposed. Immediately west, on Forrest Mountain, thick conglomerates are exposed. These have many quartz clasts, dip steeply, and strike into the THOR claims, where they are mostly overburden covered.

Falconbridge staff (Lehtinen, 1984) measured and sampled the upper 380 m of the Tango Creek Formation, and 135 m of the lower Brothers Peak Formation on Forrest Mountain. One conglomerate, between 135 and 145 m, has many quartz clasts, and may be the equivalent of the Happy Face conglomerate on the NIV claims. Falconbridge assayed 118 samples from the section. Five ran higher than 20 ppb gold, the highest 112 ppb.

Falconbridge also assayed twenty randomly selected quartz clasts for gold. The purpose was to see if gold had been fully released from quartz during transportation. Gold and quartz are closely associated, worldwide and throughout time. In hydrothermal veins gold occurs within quartz. On weathering they part company, but stay together during transportation and deposition. The gold-quartz clast association in placers of all ages is well known. Not so well known is that gold rarely occurs in quartz clasts. On the Witwatersrand virtually no gold occurs in quartz pebbles. Boyle (1979) thought that the intense reworking had broken down all quartz with gold and sulphides, so that only the purest quartz survived to enter the conglomerates as pebbles. All twenty quartz clast samples from Forrest Mountain contained less than 10 ppb gold.

Allen and MacQuarrie (1984) panned a 1 mm gold grain from stream sediments immediately below a 15 m high cliff of conglomerates on the west side of Thorne Lake.

The Sustut Group on the THOR claims warrants further work, although outcrops will be a problem.

The eastern 1/3 of the THOR claims is underlain by the Takla Group, and Omineca intrusions. Lehtinen (1984) found the rocks to be mafic to intermediate volcanics and volcanoclastics, siliceous volcanics, tuffaceous rocks, carbonaceous sediments, recrystallized limestones, thinly bedded dirty limestones, porphyritic and granitic intrusions, gabbros and diorites.

Falconbridge staff (Lehtinen, 1984) found numerous gossans in the eastern THOR claims. One area of narrow shear zones was tested. Shears are mostly less than 1 m wide, but can be up to 3 m. Gold values to 3200 ppb occur in gossans, but are lower in fresh rocks. The minerals are quartz-carbonate, chalcopyrite, sphalerite, and galena. A second area tested holds a stockwork zone in altered volcanics. Gold values to 320 ppb occur in gossans.

The eastern THOR claims are on strike with the Toodoggone gold camp. They have good potential for hydrothermal gold, and will warrant further work.

The NIV claims

The NIV claims are underlain by Sustut Group and Asitka Group rocks. An almost complete section of the Tango Creek Formation is present, and a thick portion of the basal Brothers Peak Formation.

Falconbridge staff (Lehtinen, 1984) measured and sampled a 670 m section, which is incomplete between base and 70 m, between 120 and 170 m, and for short sections below the Brothers Peak Formation.

One conglomerate became known as the Happy Face conglomerate. It occurs about 475 m above base, and is 15 to 20 m thick. It has a high clast to matrix ratio, and contains high, though variable amounts of quartz clasts. Some are 30 cm in diameter. The writer traced this conglomerate for several kilometres; it forms a good marker. Visually the conglomerate stands out from the crowd, and Falconbridge Limited did find 1000 ppb gold in a rock chip sample. Reassaying this five times gave similar results (Lehtinen, 1984).

The Happy Face conglomerate has yet to be sampled laterally. It has good potential to yield economic paleoplacer deposits.

The DEW claims

The DEW claims are underlain by Sustut Group conglomerates and sandstones, which are in fault contact with Asitka Group volcanics, and perhaps in unconformable contact with Hazelton conglomerates and volcanoclastic sediments. Dips are gentle. The exposed sections add up to perhaps 150 m. They are probably

lower Tango Creek Formation, but the basal section and contact with the Hazelton are not exposed. The exposed sections contain thick conglomerates, but these do not contain many quartz clasts.

Falconbridge staff (Lehtinen, 1984) have measured and sampled an incomplete 260 m section of the Sustut Group, but found no gold of interest.

The southwest sector of the DEW claims is an overthrust block of Asitka Group over Hazelton and Sustut groups. The Asitka consists of mafic to acid volcanics, limestones, and phyllites. Siliceous volcanics are sheared, and altered with zones of epidote and chlorite. These will warrant further work.

The MOOSE claim

The MOOSE claim covers lowlying ground with few or no outcrops. It is probably underlain by post-glacial outwash, and as such may have potential for modern placers.

The FRED claims

These are underlain by Takla Group lavas, tuffs, and sediments of Jurassic age, and possibly by Omineca intrusions. The claims were staked on a 240 ppb stream sediment anomaly, and have potential for gold in quartz veins, stock works, and contact metamorphic zones. The claims are on strike between the Toodoggone gold camp and the encouraging values Falconbridge Limited found in gossans on the eastern THOR claims.

The RED claims

The RED claims are underlain by Sustut Group sandstones and conglomerates. Sustut Group rocks appear to unconformably overlie Takla and Hazelton groups. Lord's map shows the basal Sustut Group rocks to be conglomerates. This means that the basal Tango

Creek conglomerates may be present across the claims. The claims were staked on a 160 ppb stream sediment anomaly, and have good potential for paleoplacer gold and gold in quartz veins.

The CARR claim

This is underlain by fossil bearing Hazelton sediments. Basal Sustut Group conglomerates crop out 4 km north of the claim, and 6 km north of the sample site. The claim was staked on a 950 ppb gold anomaly in stream sediments. The type of gold deposit to be expected is difficult to define. Did the gold travel 6 km downstream from Sustut rocks, or did it come from a nearer as yet undefineable source?

The COMB claims

The COMB claims are underlain by Sustut Group rocks, and Tertiary porphyry intrusions. About one km north of the claims is Big Kettle Fumerole. The claims were staked on a 210 ppb gold anomaly in stream sediments. The sample was apparently collected below the intrusive contact between porphyry and Sustut Group sediments. The potential is for paleoplacer gold, and for gold in contact metamorphic zones, perhaps related to recent hot spring activity.

W Meyer

W. Meyer



SOURCES OF INFORMATION

Allen, D. G. and MacQuarrie, D. R., 1984; Geological and geochemical report on the Gunsteel Project claims (THOR, DEW, NIV, MOOSE, FRED, RED, CARR and COMB), Omineca Mining Division - British Columbia; Report for Asitka Resource Corporation and Gunsteel Resources Inc.

Boyle, R. W., 1979; The geochemistry of gold and its deposits; Geological Survey of Canada, Bulletin 280.

Eisbacher, G. H., 1974; Sedimentary history and tectonic evolution of the Sustut and Sifton basins, North-Central British Columbia; Geological Survey of Canada, Paper 73-31.

Lehtinen, J., 1984; Geological and geochemical survey of the Asitka properties, 94 D/15 E&W; Report for Falconbridge Limited.

Lord, G. S., 1949; McConnell Creek, G.S.C. Map 962A, scale: 1" = 4 miles.

Meyer, W., 1984; Paleoplacer gold potential of Sustut Group rocks in the Niven River - Moose Valley area, B.C.; Consultant's report for Falconbridge Limited.

STATEMENT OF QUALIFICATIONS AND RELEASE

I, Wilfried Meyer, of 32 Kristi Court, Sudbury, Ontario P3E 5R4, state as follows:

I hold a Master degree in Geology from Rhodes University, Grahamstown, South Africa.

I have been since 1970, and am now a Registered Professional Engineer of the Province of Ontario, and am a member of the Canadian Institute of Mining and Metallurgy, and the Society of Economic Geologists.

I have worked as a geologist for twentyone years, nineteen in mining, exploration and research for industry, and two as contract and consulting geologist for industry and government.


I have worked on paleoplacer gold (and uranium) deposits on the Witwatersrand, South Africa, and in the Blind River-Elliot Lake area of Ontario for seven years.

In 1984 I spent eight days on the THOR, NIV, and DEW claims to assess their paleoplacer potential, and I am familiar with the regional geology through an earlier summers work in the area in conjunction with Falconbridge's work on the Sustut Copper deposit.

My contract with Gunsteel Resources Inc. to write this report presents no conflict of interest; my conclusions and recommendations are honest opinions based solely on my knowledge of the local geology, the reports given to me, and my wider experience.

I agree to this report being used in a Statement of Material Facts or a Prospectus to raise funds for exploration as proposed in this report.

Sudbury, June 08, 1985



Wilfried Meyer

