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        REPORT
        ON
    SELF-POTENTIAL SURVEY
ON THE CHRISSY & RENN GROUP OF CLAIMS
    AT RENO MINE
    NELSON MINING DIVISION, BRITISH COLUMBIA
    NTS M82F/3E
    Latitude 49* 10' Longitude 117 007'W
    for
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GUNSTEEL RESOURCES INC.
NUGGET MINES LTD.
GOLDRICH RESOURCES INC.
by
S. A. ENDERSBY, P.Eng. (B.C.)

GEOLOGICALBRANCH ASSESSMENTREPORT

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RECOMMENDATIONS
LOCATION, ACCESS, PHYSIOGRAPHY
CLAIM DATA
HISTORY
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## INTRODUCTION

Nugget Mines Ltd., Gunsteel Resources Inc., and Goldrich Resources Inc. to-gether hold a 100 in interest in the majority of the old Sheep Creek Mining Camp near Salmo in southeastern British Columbia. It is the intent of these three companies to amalgamate and consolidate the holdings into one comprehensive project.

The Sheep Creek camp ranks sixth in the province in terms of gross gold production, having produced 727,000 ounces of gold from 1, 744,000 tons of ore. About $80 \%$ of this production came from the holdings of the three companies mentioned above.

The Sheep Creek camp is underlain by late Proterozoic to Cambrian argillites, quartzites and limestones that have been folded into two tight northerly trending anticlines with an intervening syncline. Steeply dipping gold-quartz veins with minor sulphides occur in northeasterly trending faults where they intersect certain stratigraphic units. near the crest of the western anticline and western limb of the eastern anticline.

Some previous exploration work farther south on one of the veins indicated a clearly observable negative voltage potential over the vein. Where the survey line is aligned with the underlying bedding and the spacing of the readings is kept close, the vein could be pinpointed closely under light overburden. There is reason to expect parallel veins occur south of the Reno vein and it was decided to try this method to see whether other veins could be picked up. The initial results give some distinct responses, but due to early snow and continuing bad weather we have to wait until next spring to follow up on the results. The elevation where the work was done was between 6500 and 7000 feet.

## RECOMMENDATIONS:

As soon as weather permits in 1991 further self potential readings should be done on the two most easterly lines to evaluate the responses that were found. The overburden is not deep at this location and one should be able to expose any vein by hand trenching. A closely spaced grid along the vein should be able to delineate it closely.

LOCATION, ACCESS, PHYSIOGRAPHY
The Sheep Creek property is situated 39 kilometres south of Nelson, 45 kilometres east of Trail and 12 kilometres southeast of Salmo. Access is about an hour by road from salmo to the part of the property where the self potential work was done.

F.G. 1

N.T.S. 82 F

## gUnSTEEL RESOURCES INCORPERATED <br> ACCESS MAP <br> NUGGET MINES PROPERTY

Nelson Mining Division - British Columbia


NUGGET MINES PROPERTY

## CLAIM DATA

The total Nugget property in the Sheep Creek camp covers about 15,000 acres. The Renn and Chrissy groups which are associated with this assessment work comprise the following claims:

| Claim Name | $\begin{aligned} & \text { Record } \\ & \text { No. } \end{aligned}$ | Crown Grant Lot No. | No: of Units |
| :---: | :---: | :---: | :---: |
| Clarence | 497 |  | 1 |
| Buck | 1225 |  | 1 |
| Gambile | 2026 |  | 10 |
| Reno 1 | 2028 |  | 12 |
| Buck Fr. | 2736 |  | 1 |
| Gem | 2793 |  | 15 |
| Renn | 5952 |  | 15 |
| Chrissy | 5992 |  | 20 |
| Bluestone |  | 9054 | 1 |
| Blackstone |  | 9055 | 1 |
| Curlew |  | 12681 | 1 |
| Dandy |  | 12682 | 1 |
| Latham |  | 12683 |  |
| Reno |  | 12684 | 1 |
| Rhomberg F . |  | 13494 | 1 |

## HISTORY

The earliest discoveries in the Sheep Creek camp were the Yellowstone and Queen veins, staked in 1896 . Numerous other veins were discovered and production undertaken during the period 1900 to 1916.

The Motherlodevein was developed between 1906 and 1910 , after which a 100 ton cyanide mill was installed (the first of its kind in B. C.). Production continued until 1915. The Nugget Mine was worked continuously until 1910 from 4 upper levels - a stamp mill was used to process the ore. In 1918 , the Nugget and Motherlode mines were organized under a new company and some development carried out until 1922. The properties were acquired by Reno Gold Mines in 1932. Work on the Reno was continuous on a small scale from 1912 to 1927 . Ore was processed by a 30 ton cyanide mill built in 1927 near the Reno 5 level. Reno Gold Mines acquired control of the Motherlode and Nugget

Mines in 1932, rehabilitated the Motherlode mill and constructed a tramline from the Reno 5 portal to the mill. Production from the Reno Mine was continuous until 1939 and the Motherlode and Nugget until 1941.

## GEOLOGY

The Sheep Creek gold camp lies in the Kootenay Arc, a narrow arcuate belt of folded and faulted miogeoclinal sedimentary rocks of Late Proterozoic to Early Cambrian age. These sediments are intruded by intrusive rocks of the Nelson plutonic suite (Middle to Upper Jurassic) and alkalic to acid. plutons of the Coryell Intrusions (Eucene).

The Sheep Creek gold deposits occur in quartzites and argillites. Limestones in the area host important lead-zinc deposits (H.B., Jersey and Remac Mines) and tungsten deposits (Feeney, Invincible and Dodger Mines of Emerald Tungsten).

Geology of the 保eep Creek area was firsi described by Walker (1943). Local geology was further described by McGuire (1942) and a detailed study of the camp carried out by mathews (1953).

The Sheep Creek area is underlain by metamorphosed sedimentary rocks of Eocambrian to Cambrian age. Rock types include argillites, quartzites and schists of the Quartzite Range and Reno Formation, and limestones of the Laib group. The Quartzite Range formation has been subdivided into three readi\#y identifiable units, the Motherlode, Nugget and Navada members. These units are intruded by several stocks of granite, an elongated swarm of quartz porphyry sills, and lamprophyre dikes.

The sedimentary rocks have been folded into a major northerly-trending anticline paralleled on its west by a smaller anticline and intervening tight syncline.

Four well-defined sets of faults are recognized in the camp. Gold mineralization is confined mainly to the northeasterlytrending set. Displacement on the mineralized veins ranges from 3 to 25 metres (right lateral movement) although two veins, the Queen and Yellowstone, have displacements of up to 35 to 70 metres respectively. Where the faults intersect argillaceous or limestone members they are irregular and discontinuous, i.e., a considerable amount of movement is distributed across a zone of dragged beds. Where they cut quartzite members, they deflect slightly to the east, movement is concentrated along a single fracture, and veining is more pronounced.

Gold mineralization in the sheep creek camp is concentrated in quartz veins occupying northeasterly-trending steeply-dipping faults. They are productive where they cross the axis of two anticlines (the western anticline and western limb of the eastern anticline - see Figure 4) particularly where they coincide with quartzitic members (notably the upper Navada and upper Nugget.members and locally in the Motherlode member). Although the Reno Formation is dominatly argillacrous, it carried ore in the Reno Mine where it is conspicuously metamorphosed. Within quartzites, ore shoots make up varying proportions of the veins.

Vein widths range from 0 to about 1 metre or more. The veins in places, a short distance from a stope, can become narrow, inconspicuous, and difficult to recognize.

Branching veins are common in the camp. The Reno and NuggetCalhoun veins are examples. Both branches contain ore but those of a more easily trend tend to carry the best ore. En echelon veins are known in the lower Nugget workings.

The vertical range through which the vein fractures occur exceeds 1400 metres (4, 700 feet) and individual veins extend to depths of up to 600 metres (2,000 feet). Although the proprotion of ore decreases with depth, the vein fissures are strong and vein widths are reported to be as great as in higher levels. The productive horizon appears to decrease in elevation from north to south for unknown reasons.

## SURVEY RESULTS

A total of 2.8 kilometres of line were run and surveyed for self potential. Copper sulfate electrodes were used with a digital readout millivoltmeter that had a 10 megohminternal resistance. Readings were taken at 10 meter intervals on five lines going south from the : Reno vein. The results of the survey are shown on Figure 5. Lines "D" and "E" were located such that they followed the strike of the underlying sedimentary units so as to give a more uniform background reading. They were also located along the most favourable part of the structure directly south of the main stoped areas on the Reno vein. Both of these lines gave indications of a negative potential about 170 meters and 350 meters south of the Reno vein. Unfortunately heavy snow and bad weather did not allow a follow-up on these responses. It is intended to test this as soon as possible in the spring. Further more closely spaced readings will be taken at these points.


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Overburden is light at this location and a vein could be hand trenched to expose it. It could then be followed along strike using the same method.

## CONCLUSIONS

The self potential survey revealed strong negative values on both Lines "D" and "E" at about 170 metres and 350 metres south of the Reno vein. Their relative position on each line is compatible with the typical easterly stike of the veins in this area. Some previous self potential work further south on the property on the o'Donnel vein indicated there is a distinct electrical negative voltage over the vein. The effect is only noticeable when quite close to the vein and in, light overburden. However, in the southerly case it was quite observable if the readings are closely spaced and if the background readings are kept as uniform as possible by running the line along the strike of the bedding.

The Sheep Creek situation in many cases lends itself to this method where the veins cut diagonally across the bedding. The observed results are a prime target for further work as soon as snow conditions permit in the spring.

## REFERENCES



This will certify that self potential surveying was carried out between September 1 and October 14, 1990 on the Curlew, Dandy, Latham and Reno crown granted mineral claims (Lot No.'s 12861 to 12864 inclusive) in the Salmo area of the Nelson Mining Division to the value of the following:

Mobilization and Fieldwork


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        1200.00
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Stan A. Endersby, Eng.

I, Stan A. Endersby. certify that:

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1.) I am a graduate of the University of British Columbia in Chemical Engineering (B.A.Sc. 1953). Also I have an M.Sc. (1965).
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2.) I am a member in good standing of the Association of Professional Engineers of $B$. C.
3.) This report is based on fieldwork carried out by
Mr. F. Critchlow and Mr. D. Llewellyn on the Curlew,
Dandy, Latham and Reno crown granted mineral claims
(Lots 12681 to 12684 inclusive) between September 1,1990
and October 14,1990 and supervised by myself.
4.) I have an indirect interest in the properties through Nugget Mines Ltd. and Goldrich Resources Inc.

Base Station\# One

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| 1.30 | 11 | " | $+16$ | 1 |
| 140 | 11 | 11 | $+05$ | $!$ |
| 150 | 11 | " | $-18$ | 1 |
| 1.60 | 11 | 11 | $-16$ | 1 |
| 1.70 | 11 | 11 | -05 | 1 |
| 170 |  |  | -05 | I |
| 180 | 11 | 111 | -52 | I |
| 190 | 11 | 11 | -61 |  |
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| 1120 | 1 | 1 | $+06$ | 1 |
| 1130 | 1 | 11 | -06 | I |
| 1140 | 11 | 11 | -08 | 1 |
| 1150 | 11 | 11 | 00 | I |
| 1160 | 11 | " | $+43$ | 1 |
| 1170 | 11 | 11 |  |  |
| 1170 | 11 | 11 | +07 | 1 |
| 1180 | " | 11 | $+33$ |  |
| 1190 | 11 | 11 | $+23$ | 1 |
| 1200 | 17 | " | $+60$ | 1 |
| 1210 | " | 11 | $+74$ |  |
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| 1230 | 11 | 111 | $+88$ |  |
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| 110 | " | " | $+20$ |
| 120 | " | " | +11 |
| 130 | " | " | $+07$ |
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| 150 | " | " | $+11$ |
| 160 | " | " | $+08$ |
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| 180 | " | " | -21 |
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| 210 | " | " | $-55$ |
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September 1990.


LOCATION OF BASE STATION _ـ_ 250 Meters due south of: the
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center of Portal $\# 4$, Reno Mine

Base Station $\#$ Three
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+10Meter: Due North

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September 1990.
; DISTANCE; DIRECTION; READING

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| 1110 | " | " | -43 |
| 1120 | " | " | -20 |
| 130 | " | " | -61 |
| 1140 | " | " | -56 |
| 150 | " | " | -57 |
| 1160 | " | " | -58 |
| ! 170 | " | " | -56 |
| 180 | " | " | -64 |

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LOCATION OF BASE STATION 3
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Base Station\# Five
September 1990.


Base Station非Six


September 1990.


LOCATION OF BASE STATION $\quad \underline{\square}$
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40 Meters S.W.of $\# 4$ Portal Reno Mine.

Base Station\# Seven
September 1990.


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Base Station\# Ten

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LOCATION OF BASE STATION 10 IS 200 Meters east of 非 Portal
Reno Mine, 70 meters north of the Reno vein

September 1990.


| Base Stati | on\#Eleven |  |  | September 1990. |
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| LOCATION OF BASE STATION 11 |  |  | IS 230 Meters | South-East $0^{1} 10^{\circ}$ |
| from Station 10. |  |  |  |  |

