

GSC INDUSTRIAL PARTNERS PROGRAM/
PROGRAMME DE PARTNERIAT INDUSTRIEL DU CGC

GENERAL INFORMATION:

Project title: **Brucejack maps, zoning, alteration**

Project #/Financial Subunit/RC Code: 700059

Project Leader(s): R.V. Kirkham and D. Visagle

Branch/Division/Subdivision/Section: MCGB, MRD, MDS

Program/Subprogram/Component: Minerals/Study of copper and molybdenum deposits in Canada/Study the interrelationships of copper and gold in complex porphyry systems.

EARP Status:

Start/End dates: February 15, 1993 to March 31, 1994

PROJECT DESCRIPTION (CORPORATE LEVEL):

Geographic/NTS Area: Northwestern B.C.-104B/8,9

Objectives and Description: To provide a vehicle for combining GSC and company work and making it available to the public in the form of 1:5000 scale maps (geology, lithochemistry, mineral distribution, alteration) and completing lithochemistry for rocks collected in 1991 and 1992.

Justification and Benefits: This work should help document the geology, lithochemistry, mineral distribution and alteration patterns in the area and help identify sites favourable for exploration. If more can be learned about the Au- and Ag-bearing structures and their associated alteration predictive models might be developed for exploration for blind deposits. Similar company- and GSC- sponsored work in 1991 and 1992 was successful in identifying new exploration targets. Some of these zones will be drilled in 1993.

Background: Pyritic gossans in the Sulphurets region are part of a large, deformed and metamorphosed Lower Jurassic porphyry copper-gold system. The system was emplaced in deformed Upper Triassic Stuhini Group sedimentary rocks and the basal part of the Lower Jurassic Hazelton Group volcanic sequence and is associated with intrusions coeval with Hazelton Group volcanism.

The area is complexly deformed with pre-Hazelton Group north-trending upright folds affecting Stuhini Group rocks while southeast-vergent overturned folds and thrusts and steep north-south faults postdate all stratigraphic units. Deformation was accompanied by greenschist to subgreenschist facies metamorphism obscuring hydrothermal alteration and mineral distribution patterns.

High-grade gold- and silver-bearing vein systems and bulk-tonnage Cu-Au, Cu-Au(-Mo) and Au(-Mo) zones have been the main exploration targets. The bulk-tonnage zones are thought to be part of a large, complex porphyry system(s), whereas some precious metal veins are thought to be part of the porphyry system and others related to younger syntectonic processes. Lack of good stratigraphic control and a complex postmineral fault history make exploration difficult.

MORU?

Milestones: 4 preliminary maps

Business Opportunities: None

Planned Accomplishments: Produce geological maps for the study area, additional lithogeochemical information, and generalized alteration patterns.

Outputs/Deliverables: 2 1:5 000-scale geological maps; 2 generalized alteration distribution maps; 1:5 000 scale lithogeochemical, and 1 mineral distribution map will be produced.

Link to Government Initiatives: Aid in the discovery of mineral resources.

Protected Resource Requirements:

	<u>93/94*</u>	<u>94/95*</u>	<u>95/96*</u>	<u>96/97*</u>	<u>Total</u>
O&M:					
a) GSC (IPP)	10 000 ²				
b) Industry (Newhawk Gold Mines Limited)	4 000 ³				
c) Other GSC ¹ (le A-base, MDA, EXTECH)					
Salary/Salaire:					
a) GSC (IPP)	2 000 ²				
b) Industry	8 000 ³				
c) Other GSC					
Capital:					
a) GSC (IPP)					
b) Industry					
c) Other GSC					
TOTAL					\$24 000

*
** budget
*** actual/réel

Collaborators: S. Roach
S.B. Ballantyne
D.C. Harris

¹ \$10 000 GSC A-base for work in adjacent areas outside of the Newhawk Joint Venture Property.

² GSC funds will be mainly directed towards helicopter costs for work on Newhawk's ground, part of mobilization costs to Newhawk camp, chemical analyses, part of student salary, and possibly some of Steve Roach's salary for work on maps.

³ Newhawk Gold Mines Limited would like to divide the budget into 6-month intervals with \$6,000 to be spent in the first 6 months. Approval of the budget for the second 6 months would be contingent on the availability of corporate funds. Most of these funds will be directed to Steve Roach's salary to work on maps and alteration studies and room and board and logistical support for GSC personnel in Newhawk's camp.

NEWHAWK GOLD MINES LTD.

Suite 880 - 625 Howe Street
Vancouver, B. C. V6C 2T8
CANADATel: 604 - 687 - 7546
Fax: 604 - 689 - 6051

March 2, 1993

Mr. Rod Kirkham
Geological Survey of Canada
601 Booth St., Room 686
Ottawa, Ontario
K1A 0E8

Dear Rod:

RE: GSC INDUSTRIAL PARTNERSHIP PROGRAM

This letter is to confirm Newhawk's financial commitment to Project # 700059. As outlined by yourself, the program in the first six month phase would result in the following expenditures by Newhawk:

O&M	\$4,000	Primarily R&B along with field support.
Salary	\$6,000	Primarily Steve Roach's salary.


Another \$2,000 would be provided in the second six month period depending upon the availability of corporate funds.

I understand that Newhawk will be billed for our \$6,000 as funds are required. If you have any questions, I can be reached at 604-687-7545.

Sincerely yours,

NEWHAWK GOLD MINES LTD.

per:


Dave Visagie, P. Geo.
Senior Geologist

DAV/dms

Energy, Mines and
Resources CanadaÉnergie, Mines et
Ressources CanadaGeological Survey
of CanadaCommission géologique
du Canada

601 Booth Street
Ottawa, Ontario
K1A 0E8

12 February 1993

F.G. Hewett
Vice-President
The Northair Group
860 - 625 Howe Street
Vancouver, B.C.
V6C 2T6

Dear Fred:

Attached is a preliminary draft of a GSC Industrial Partners Program (IPP) project proposal. It is meant to help Newhawk Joint Venture exploration in the Brucejack-Snowfield area and provide a vehicle for combining GSC and company work and eventually making the information available to the public. Newhawk will obtain 1:5 000-scale geology, lithogeochemistry, mineralogy, and general alteration maps for the Brucejack area; a 1:5 000-scale geology map combining GSC and Newhawk data from the Golden Marmot area to the Mitchell Glacier; obtain lithogeochemical analyses (neutron activation Au + 33 elements) for samples collected in 1991 and 1992 and those to be collected in 1993 (some fill-in GSC traverses); and general alteration patterns based on staining of samples for potash feldspar and K_2O/Na_2O ratios obtained from chemical analyses.

Steve Roach this spring would work on the 1:5 000 geology sheet north of the Brucejack Creek sheet and on the 1:5 000-scale lithogeochemistry and generalized alteration maps for the Brucejack Creek sheet. Don Harris will work on an ore mineral distribution map for the same area. He has a considerable amount of new data for this area that has not yet been passed on to Newhawk. We will analyze geochemical data, mineral and metal zoning, and general alteration patterns and attempt to develop ideas on the controls on Au and Ag distribution in the area. If Steve is available next winter we will have him update the maps based on 1993 fieldwork.

.../2

Canada



1842-1992
Geological Survey of Canada
150 Years of Service to the Nation

1842-1992
Commission géologique du Canada
Au service de la nation depuis 150 ans

- 2 -

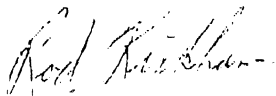
Your costs would be largely Steve's salary this spring and possibly next winter. Room and board and logistical support for a few weeks for GSC personnel similar to what you have done in the past and possibly payment for some chemical analyses. Hopefully the GSC will match your funds and we can get the work done in a timely manner. I would not expect the Newhawk Joint Venture to fund anything that was not of direct exploration interest.

Please let me know soon your reaction to this proposal. This is the first of these that I have done and it might need to be changed. Even if it looks good to us it might still be rejected by the GSC.

In going over your data with Dave in Vancouver things look quite promising and are falling into place. The detailed surface work seems to be paying off. Hopefully some of this exploratin this summer will be successful and lead to more work in the area and, of course, eventually to a profitable mine(or two or three, etc.?).

Best regards.

Yours sincerely,



R.V. Kirkham

RVK/lo

Attachment

GSC INDUSTRIAL PARTNERS PROGRAM/
PROGRAMME DE PARTENARIAT INDUSTRIEL DU CGC

GENERAL INFORMATION:

Project title: Sulphurets geology

Project #/Financial Subunit/RC Code: 700059

Project Leader(s): R.V. Kirkham and B. Fowler

Branch/Division/Subdivision/Section: MCOB, MRD, MDS

Program/Subprogram/Component: Minerals/Study of copper and molybdenum deposits in Canada/Study of the interrelationships of copper and gold in complex porphyry systems.

EARP Status:

Start/End dates: April 1, 1993 to March 31, 1994

PROJECT DESCRIPTION (CORPORATE LEVEL):

Geographic/NTS Area: Northwestern British Columbia-104B/8,9

Objectives and Description: To produce 1:5 000-scale geology maps and obtain more lithogeochemical analyses.

Justification and Benefits: This work should help identify sites for future exploration and provide base maps for future lithogeochemical, mineral distribution, and alteration studies. This work would be consistent with that being done on the adjacent Newhawk Joint Venture ground, and is part of a district-scale study of mineral deposits.

Background: Pyritic gossans in the Sulphurets region are part of a large, deformed and metamorphosed Lower Jurassic porphyry copper-gold system. The system was emplaced in deformed Upper Triassic Stuhini Group sedimentary rocks and the basal part of the Lower Jurassic Hazelton Group volcanic sequence and is associated with intrusions coeval with Hazelton Group volcanism.

The area is complexly deformed with pre-Hazelton Group north-trending upright folds affecting Stuhini Group rocks while southeast-vergent overturned folds and thrusts and steep north-south faults postdate all stratigraphic units. Deformation was accompanied by greenschist to subgreenschist facies metamorphism obscuring hydrothermal alteration and mineral distribution patterns.

High-grade gold- and silver-bearing vein systems and bulk-tonnage Cu-Au, Cu-Au(-Mo) and Au(-Mo) zones have been the main exploration targets. The bulk-tonnage zones are thought to be part of a large, complex porphyry system(s), whereas some precious metal veins are thought to be part of the porphyry system and others related to younger syntectonic processes. Lack of good stratigraphic control and a complex postmineral fault history make exploration difficult.

- Milestones: 3 preliminary maps
- Business Opportunities: None
- Planned Accomplishments: Produce preliminary geological maps for the area and obtain additional lithochemical information.
- Outputs/Deliverables: Three 1:5 000-scale preliminary geology maps.
- Link to Government Initiatives: Aid in the discovery of mineral resources.

Protected Resource Requirements:

	<u>93/94*</u>	<u>94/95*</u>	<u>95/96*</u>	<u>96/97*</u>	<u>Total</u>
O&M:					
a) GSC (IPP)	8 000 ²				
b) Industry (Placer Dome Inc.)	2 000 ³				
c) Other GSC ¹ (le A-base, MDA, EXTECH)					
Salary/Salaire:					
a) GSC (IPP)	2 000 ²				
b) Industry	8 000 ³				
c) Other GSC					
Capital:					
a) GSC (IPP)					
b) Industry					
c) Other GSC					
TOTAL					<u>\$20 000</u>

PD of the 12!

- * notional/possible
- ** budget
- *** actual/réel

¹ \$10 000 GSC A-base for work in adjacent areas outside of Placer Dome's property.

² GSC funds will be used mainly for helicopter transport for work on Placer Dome's ground, part of mobilization costs, chemical analyses, part of student salary and possibly part of Ron Wells' salary.

³ Placer Dome funds will be used mainly for salary (Ron Wells?) for work on maps and alteration studies, R. Wells travel costs Kamloop to Vancouver, and for chemical analyses.

FEB 26 '93 02:54PM PLACER DOME KAMLOOPS

P.2



PLACER DOME INC.

WESTERN CANADA EXPLORATION OFFICE

1440 Hugh Allan Drive
Kamloops, B.C.
V1S 1L8Tel: (804) 371-3500
1-800-667-6463
Fax: (804) 372-7784

February 26, 1993

Rod Kirkham
Mineral Deposits Subdivision
601 Booth Street, Room 686
Ottawa, Ontario
K1A 0E8

Dear Rod:

Re: 1993 Kerr/Sulphurets GSC Industrial Partners Program (IPP) Proposal

Furthering our discussion regarding the above a couple weeks ago, I feel it prudent to make the following remarks and comments at this time.

It is with regret that I inform you that Placer Dome will not be conducting a 1993 exploration program on the Kerr/Sulphurets projects. This recent decision is based upon current policies, exploration priorities and objectives, and in no way should be construed as a corporate downgrade of the camp's resource potential.

Recently I submitted a Kerr/Sulphurets "maintenance budget" to Ed Kimura. Ed and I have discussed your IPP proposal, and we are both in agreement that such work is in everyone's best interest. Therefore, I am pleased to inform you that PDI's portion of your work proposal (\$10,000) has been incorporated in my Sulphurets maintenance budget. I am hopeful for a positive decision, which could be available as early as mid-March. I am also hopeful that, in light of on-going federal cut-backs, this proposal will be deemed worthy of funding by the GSC. There is a tremendous database available, and I relish the idea of it being synthesized and presented in 1:5000 scale alteration and geology maps.

Once I have a final decision from management, I will inform you of PDI's level of interest. Until then, thank-you and good luck.

Yours truly,

PLACER DOME INC.
Brian P. Fowler, P. Geo.
Project Geologist
Kerr/Sulphurets

cc Ed Kimura



Energy, Mines and Resources Canada
Énergie, Mines et Ressources Canada

Geological Survey of Canada

Commission géologique du Canada

601 Booth Street
Ottawa, Ontario
K1A 0E8

12 February 1993

B. Fowler
Placer Dome Inc.
Western Canada Exploration
1440 Hugh Allan Drive
Kamloops, B.C.
V1S 1L8

Dear Brian:

Attached is a copy of a preliminary draft of a proposal to obtain funds under the GSC Industrial Partners Program (IPP). Hopefully we will be able to obtain some GSC and Placer Dome funds to support work at Sulphurets and generate products that will be useful to Placer Dome in its exploration and of value to the general public.

What I hope to do with the IPP proposal is to speed-up getting GSC products (e.g. geology, lithogeochemistry, and mineral distribution maps to you; integrating some of Placer Dome's information into the products (e.g. detailed mapping around Sulphurets Gold Zone); obtaining chemical analyses (e.g. neutron activation Au + 33 elements) faster (e.g. GSC 1991, 1992, and 1993 samples); and establish general alteration patterns (potash feldspar staining of GSC samples and K₂O/Na₂O ratios obtained from chemical analyses). For this year's proposal I want to concentrate on the geology maps and bring chemical analyses up-to-date. If we are successful with this activity we could follow next year with the lithogeochemical, mineral distribution, and general alteration maps. The maps would be consistent with those being produced on the adjacent Newhawk Joint Venture ground. I hope that next fall we could perhaps hire somebody like Ron Wells or someone in Vancouver to do some of the work (e.g. cartography and attempting to integrate some of John Payne's map data on the Kerr and detailed company work on Sulphurets Gold, Mitchell, and Alder zones into the 1:5 000-scale maps, and work on general alteration patterns). I do not want to attempt to do too much this spring because I will be heavily

.../2

Canada



1842-1992
Geological Survey of Canada
150 Years of Service to the Nation

1842-1992
Commission géologique du Canada
Au service de la nation depuis 150 ans

- 2 -

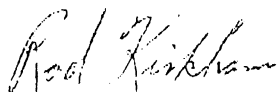
committed with Steve Roach on Newhawk's ground and it should be more convenient to work with Placer Dome once I move to Vancouver next summer.

I would hope that Placer Dome could pay for such things as Ron Well's or somebody else's salary for working on the maps, some chemical analyses, and room and board for GSC personnel for a week or two next summer similar to what you have done in the past. I would not expect Placer Dome to pay for work that was not of direct exploration interest. Hopefully, the GSC will put up matching funds for work on your property.

Please let me know soon your feelings about the proposal. Even if we think that it is a good proposal there are no guarantees that it will be approved by the GSC.

Best regards.

Yours sincerely,



R.V. Kirkham

RVK/lo

Attachment

I N T E R O F F I C E M E M O R A N D U M

Date: 01-Jun-1993 02:04pm PDT
From: Tom Schroeter
TSCHROETER
Dept: Energy, Mines & Petroleum Res.
Tel No: 660-2812

TO: David Lefebure (DLEFEBURE)
TO: Ron Smyth - Min. of EMPR (RSMYTH)
Subject: GSC IPP - Sulphurets Area

I've just had an opportunity to review a copy of Jim Franklin's fax dated May 21 to Dave. Interesting, but dangerous. I have been in continuous contact with both Placer Dome (Sulphurets Gold-Porphyry Sequel) and Newhawk (Snowfield Zone-Porphyry Sequel and field visit). I have an open invitation (from Newhawk) and am planning a site visit this summer, probably in late August. For the Porphyry Sequel there will be 4 papers submitted dealing with the Sulphurets area- a testimony to its geological 'laboratory' significance and exploration/mining significance.

Please keep me informed re-IPP scenario, especially GSB-GSC 'communication'/'planning'. Cheers, Tom.