082M 244 005079

June 26, 1991

Notes on Mine Visit by Rick Meyers

SAMATOSUM PROJECT OVERVIEW

Introduction

The Samatosum Division is a joint venture between Minnova Inc. (70%) and Rea Gold Corporation (30%). The mine was brought into production in June 1989, less than 9 months after receiving Stage 1 - Approval in Principle.

Initially planned at an annualized 422.5 tpd milling rate, the operation has been running at 465 tpd since early 1990, primarily to discount the effects of higher dilution than originally anticipated.

Ore Reserves

The orebody has proved to be far more structurally complex than projected and grades are extremely variable. This has led to substantial ore losses in fault zones, higher dilution, and over-estimating of grades. Negative variances in these areas have been held , on average, within feasibility limits of 20%.

Our best estimate of mining reserves (based on +250 g/t cutoff) is stated prior to production:

	OPEN PIT		UNDERGROUND	
	Feasibility	Updated	Feasibility	Updated
tonnes(t)	500,444	487,175	273,186	247,573
Cu (%)	1.15	0.96	0.75	0.80
Pb (%)	1.62	1.26	1.00	1.10
Zn (%)	3.62	2.32	1.75	2.00
Ag (g/t)	988	895	544	639
Au (g/t)	1.77	1.39	1.08	1.10

Due to major drops in metal prices, in particular, silver and gold, a revised approach to reserves has been predicated. Open pit reserves have been estimated using the 250 g/t Ag cutoff which is valid when one considers that almost all waste stripping has been done and incremental operating profit can be obtained at this cutoff. The underground ore must carry a much higher mining/development cost and a $100/tonne NSR cutoff has been used for the geological reserve. This equates approximately to a +750 g/t cutoff.

Reserves as of May 1, 1991 on this basis are:

	OPEN PIT	UNDERGROUND
tonnes (t)	173,014	79,343
Cu (%)	0.67	1.22
Pb (%)	0.57	1.76
Zn (%)	1.19	3.02
Ag (g/t)	636	1,038
Au (g/t)	0.86	1.75

A Phase 3 geological reserve of up to 40,000 tonnes involving push back of the north wall is currently being evaluated. Previous evaluations indicated it was not economic.

Mining

Mining is currently completing the 1290 Bench of Phase 2 of the open pit. Phase 1 was completed in May 1990. The mine contractor, Ledcor Industries Ltd., of Vancouver, B.C. started work in March 1989 and quickly mobilized to a production rate of approximately 9000 m^3/day on a 4-day week.

PAG –

Waste is dumped to the south of the pit in an ordered manner that creates altering layers of mafic pyroclastics (net acid consuming) and tuffs, sericite, argillite, etc. (net acid generating "PAG") rocks. This program has gone well with only minor problems associated with sericitized mafics leading to difficult classification and a dispute with Ledcor over rehandling, delaying covering the last lifts of PAG until now.

The pit walls have been stable on an overall basis. Only predictable small crest of berm wedge failures and a 55000 m^3 footwall sliding on foliation "plane" failure have occurred.

Milling

Milling results have been close to feasibility estimates and exceeded these on differential Cu/Pb separation . Feasibility results are consistently achieved with the "clean" quartz vein hosted ore but have not been achievable to date with the current systems for the silicified MUT ore type that represents approximately 50% of the feed.

Ore is ground to 60% - 200 mesh and three concentrates are produced; Cu, Pb, and Zn. The silver is contained in tetrahedrite and therefore, the Cu concentrate carries the majority of the Ag with Ag in the Pb and Zn concentrates being directly related to Cu contamination.

Comparative results are as follows:

	"Feasibility"	Actual 1990	YTD 1991	Remarks
%Cu Rec to Cu Conc	76.5	75.2	81.7	(intentionally high to maximize NSR)
%Pb Rec to Pb Conc	54.8	44.9	35.3	(intentionally low to maximize NSR)
%Zn Rec to Zn Conc	76.8	66.8	64.4	(effect of Sil MUT,Cu Rec.high)
%Ag Overall Recovery	96.0	93.9	93.8	(effect of sil MUT)
%Au Overall Recovery	93.5	88.5	84.5	

Tailings are delivered by gravity to the tailings impoundment area located north of the mill site via a 200 m Ø pipeline. Tailings are distributed as best as possible below current water levels and at all times below the abandonment elevations that would permit a 2 metre deep water cover.

Smelter Contracts/Net Smelter Returns

Samatosum concentrates have been sold to 4 smelters as follows:

Cu Concentrate - 75% to MHO - Antwerp - Belgium
25% to DOWA - Kosaka - Japan

Pb Concentrate - 100% to ASARCO - East Helena - Montana

Zn Concentrate - 100% to COMINCO - Trail - B. C.

Very few smelters were willing to offer terms on the copper and lead concentrates because of Arsenic, Antimony, and Cu/Pb/Zn cross contamination. Cominco is the only economic outlet for the zinc as our volumes are too low to develop an efficient off shore market.

Recently, MHO has elected to not renew their contract which expires on June 30, 1991 and we have been trying to convince Dowa to take 100% of the copper concentrate. So far Dowa has been only willing to negotiate for 1700 WMT on about 50% of next years open pit production. There is a world wide shortage of smelting capacity for the concentrates being mined.

Lead and zinc contracts appear to be secure although new terms are substantially worse than those we have had in the past 2 years.

Metal prices and exchange rate are substantially below feasibility levels as follows:

	Base Feasibility	Actual May 1991
Ag $US/oz	$ 6.00	$ 4.00
Au $US/oz	440.00	360.00
Cu $US/lb	0.85	1.01
Pb $US/lb	0.28	0.25
Zn $US/lb	0.40	0.49
Exchange $Cdn/$US	1.25	1.15

As there is little, if any, NSR for base metals in our contracts, project profitability is directly related to Ag and Au prices which have fallen in Canadian dollar terms by 39% and 25% respectively.

Economic Viability

It is always critical that mining companies track the stand alone viability of their investment decisions. If they do this, they will find that true net wealth creation is an elusive achievement in the mining industry. Kerr Addison - Minnova's assessment of the Canadian industry is that only approximately 1 in 10 mine investment decisions meet the criteria of true profitability.

It is a bit too early to conclude on Samatosum's economic viability. Approximately 43% of January 1991 through April 1992 production has been sold forward at approximately US$7.05/oz. Although we can make an operating profit at current silver prices, we would have suffered a large investment loss without the forward selling program.

Two factors will determine whether Minnova loses or makes money on its investment:

1. Underground Profitability;

2. Net Abandonment Costs.

The original underground program of 2 years reserve required feasibility or greater price/exchange levels and also, a less structurally complex geological model. Since we are only in business to return profits to our shareholders, the whole underground program had to be reassessed which brings us to the present time.

As the U/G production is not sold forward at higher prices, it must be justified at current prices and exchange rate. We believe, as the result of extremely detailed drilling, and a conservative approach to mining reserve definition, that given the feasibility and costs we have used, our U/G proposal will be profitable.

The second area of uncertainty is the net abandonment costs. The joint venture has been building a fund that will exceed $3.0 million at the end of the project in October 1992 (assuming no new reserves found). This, along with proceeds of assets disposal will pay for abandonment activities including long term water treatment and monitoring if these prove necessary.

A conservative estimation process has been used and hopefully, this may be a source of currently uncredited payback on the original investment.

In conclusion, our current projections show a loss on Minnova's investment, but, a profitable underground, less abandonment costs, and higher prices could allow us to break even.

George Cross News Letter
NO.114(1988)
JUNE 14, 1988

92F

BETTER RESOURCES LTD. (BRZ-V)

EXPLORATION PROGRAM- UNDERWAY FOR 1988 An initial 1988 program of 15,000 ft. of NQ drilling has been budgeted at an estimated cost of $500,000 for the 100% owned Mt. Washington property 15 miles west of Courtenay, Vancouver Island, B.C. Drilling has begun on the northern continuation of the Lakeview zone on 100 ft. centers to enlarge the open pit reserves. A large soil geochemistry anomaly extends continuously 3500 ft. north of the previously drilled area with values ranging from 100 to 6300 parts per billion gold. The first three holes have cut the zone and assays are expected. A second drill is being added to drill exploration targets.

The flow-through share agreement with NIM and Company, Limited Partnership-1988 has been amended to extend the $1.1595 share price for the remaining $600,000 flow-through commitment to the end of 1988. Better Resources also has $1,000,000 in term deposits.

Two major companies are active on immediately adjacent properties.

To illustrate the potential of the property Better Resources calculated a mineral inventory using an 0.03 oz.gold/t cut-off. This resulted in a drill indicated tonnage of 1,527,300 tons of 0.112 oz.gold/t and 0.69 oz.silver/t, including 419,000 tons at 0.116 oz.gold/t available by a possible open pit.

In order to illustrate the distribution of gold in the ore zone a second calculation has been compelted using a 0.1 oz.gold/t cut-off and a minimum 6 ft. thickness which showed:

	TONS	OZ.GOLD/TON	OZ.SILVER/TON
Possible Open Pit	168,500	.233	.89
Underground	303,500	.270	1.48
Total	472,000	.257	1.27

The underground tonnage has been reduced and grade raised from the January published figures of 559,600 tons at 0.163 oz.gold/t at 0.1 oz.gold/t cut-off.

Metallurgical testing is continuing with differential flotation of sulphide concentrates with encouraging results. Some gold would go into a marketable concentrate and the bulk of the gold would be largely recoverable by cyanidation of the other concentrate. Present indications are that total recovery may exceed 90%. A summary metallurgical report is expected in one month.

WAR EAGLE MINING COMPANY(WEM-V)

WHITEMAN CREEK GOLD BELT- War Eagle Mining Company has acquired a 100% interest in the Queen Bee claim group located about 2.5 miles to the west of Huntington Resources' Brett property, Vernon mining district, B.C. The Queen Bee claim, comprising 20 units, was purchased for $25,000 and a 1.5% net smelter return, which terminates after payments of $500,000 from production.

Ray Woolverton, the company's consulting geological engineer, has confirmed panning gold colours from the creek that drains the Queen Bee property and reports similar rock units as found on Huntington's Brett property.

HUNTINGTON RESOURCES INC.(HUN-V)

STEP-OUT HOLES BEING DRILLED- Huntington Resources Inc. reports that two diamond drills are completing step out holes in the area of RC-88-11 on the Brett claims 25 km west of Vernon, B.C., which intersected 235 feet with an average grade of 2.03 oz.gold/ton. Lacana Mining Corporation can earn a 51% interest by spending $500,000 prior to 31Dec88. (SEE GCNL No.'s 113 p.2 and 110 p.1, 1988, both with maps overleaf).

82M244

REA GOLD CORPORATION(REO-V,T,REOGF-Nasdaq)

DRILL RESULTS REVIEWED- Minnova Inc. has reported the results from 2,576 meters of diamond drilling on the Samotosum joint venture in the Adams Lake area NW of Kamloops, B.C. in which Rea Gold has a 30% working interest and a retains a 5% net smelter return royalty. TABLE OF DRILL RESULTS OVERLEAF PAGE 1.

The objectives were to test the northwest extension of the mineralized horizon beyond the Sam deposit. RG-240 was drilled on section 99 + 80 meters in an attempt to extend the 10 meter thick zone of ore reserves seen on section 99 + 40 (see table). The drilling determined that there are two potential ore horizons, the Sam and Barite, to the northwest.

Minnova has shipped 50 tonnes of samples to complete metallurgical testwork to Lakefield Research of Canada.

On the 100% owned Discovery Gold zone, 1/2 mile SW of the Samatosum deposit, 2,230 feet of diamond drilling was completed. Only one hole DDH 88-4, encountered 3.2 meters of massive sulphide from 41.8 to 45.0 meters assaying 0.392 oz.gold/t, 1.83 oz.silver/t, 3.93% lead, 5.21% zinc and 0.78% copper. Dolmage Campbell are calculating reserves for the Discovery Gold zone.

9999 FINE GOLD

REA GOLD

REA GOLD CORPORATION

The results are shown in Table I.

TABLE I

HOLE NO. (SECTION)	INTERVAL (METRES)	APPARENT WIDTHS		Au (oz/T)	Ag (oz/T)	Zn%	Pb%	Cu%
		METRES	FEET					
(100+41)								
RG 222	52.50- 53.30	0.80	2.6	0.053	1.39	0.59	1.21	0.6130
(100+40)								
RG 223	97.60- 98.20	0.60	2.0	0.064	1.74	0.11	3.92	0.2530
	101.90-102.90	1.00	3.3	0.044	7.93	2.67	1.29	0.5140
(101+01)								
RG225	22.60- 24.00	1.40	4.6	0.010	7.03	0.56	0.01	0.203
	31.70- 32.30	0.60	2.0	0.013	12.04	0.92	1.05	0.325
(101+98)								
RG 226	48.60- 48.75	0.15	0.5	0.020	73.79	22.75	9.65	11.600
	155.50-156.00	0.50	1.6	0.003	4.81	3.46	8.40	0.048
	156.00-156.70	0.70	2.3	trace	1.47	1.00	0.60	0.092
	180.00-180.50	0.50	1.6	0.097	0.073	0.06	0.05	0.010
(103+00)								
RG 233	117.60-118.00	0.40	1.3	0.016	2.02	7.40	4.02	0.371
	128.90-129.70	0.80	2.6	0.016	4.04	0.67	0.97	0.712
(99+81)								
RG 240	39.00-40.50	1.50	4.9	0.018	6.77	0.03	0.04	0.235
	42.00-43.50	1.50	4.9	0.017	10.32	2.89	1.28	0.289
	43.50-45.00	1.50	4.9	0.010	3.14	0.15	0.08	0.107
	52.60-54.10	1.50	4.9	0.006	4.07	1.32	0.52	0.212
	56.00-57.10	1.10	3.6	0.083	26.36	4.35	2.89	0.620
	62.10-63.10	1.00	3.3	0.026	11.31	3.62	0.38	0.320
	64.60-66.00	1.40	4.6	0.025	20.80	1.38	0.96	0.610
	69.10-69.90	0.80	2.6	0.081	55.12	2.33	0.44	1.510
	69.90-71.30	1.40	4.6	0.142	74.37	4.76	1.23	2.100
	71.30-73.00	1.70	5.6	0.021	5.22	4.78	2.88	0.236

(82M/0244)

NMiner Nov 7/88

Formal production decision for Samatosum project

VANCOUVER – With all government approvals in hand, the board of **Minnova Inc.** (TSE) recently made a formal decision to bring the Samatosum project near Adams Lake, B.C. into production. The company has a 70% interest and is operator of the high grade silver project, while partner **Rea Gold Corp.** (TSE) holds a 30% working interest and a 5% net smelter royalty.

Minnova's board also ratified the recommendation by project management to proceed with the completion of all construction work necessary to begin full production as soon as possible.

The mill will have a nominal daily capacity of 500 tons but will be able to handle peak loads up to 550 tons per day. Total capital and indirect costs, including a 10% contingency, are estimated to be $32.2 million which includes $7.8 million in development and operating costs. Rea Gold's share of costs necessary to maintain its working interests are $9.7 million.

The Samatosum deposit, which has a mineral inventory (undiluted) of 661,000 tons grading 32.10 oz silver, 0.052 oz gold per ton, 1.2% copper, 3.5% zinc and 1.7% lead, will be mined by a combination of open pit and underground methods.

Teck to develop Ajax orebody

VANCOUVER – **Teck Corp.** (TSE) has announced plans to develop its Ajax copper-gold deposit near Kamloops, B.C., about six miles from its Afton mill. The property is held by Afton Operating Corp. a 73%-owned subsidiary.

Capital cost for the project is estimated to be $12 million, including equipment purchases, pit preparation, modifications to the Afton mill, and the purchase of surface rights. Development work will get under way as soon as permits have been obtained.

The Ajax property is owned 70% by Afton and 30% by a joint venture between **Cominco Ltd.** (TSE) and **Imperial Metals** (TSE). The Afton mill is currently processing feed from low grade stockpiles and ore from the adjacent Comet-Davenport property.

Reserves at Ajax are estimated to be 27.2 million tons grading 0.46% copper and 0.01 oz gold. The planned milling rate for Ajax is 11,000 tons-per-day with production beginning next spring.

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New reserve estimate for Cathedral Gold

VANCOUVER – A new reserve estimate has been prepared for the AT zone at **Cathedral Gold Corp.**'s (TSE) Porcher Island property 35 miles south of Prince Rupert, B.C. The latest estimate is based on 78 holes representing 40,000 ft of drilling of which 56 holes or 30,000 ft was completed in the AT zone.

Drill-indicated reserves now stand at 623,000 tons grading 0.2 oz gold (cut and diluted) over an average mining width of 11 ft. These occur within 330 ft of surface and along a strike length of 1,000 ft. The zone remains open to the west and also at depth.

A major drilling program is currently under way to test the continuity and strength of the mineralization to a depth of 1,000 ft. "The over-all objective of this program is to establish sufficient reserves within the AT zone required to support commercial production," says Pierre Lebel, president.

George Cross News Letter

NO.146(1988)
JULY 29, 1988

82M244

REA GOLD CORPORATION(REO-V.T: REOGF-Nasdaq)

PRODUCTION PLANS REVIEWED - Larry W. Reaugh, president of Rea Gold Corporation reported that the Stage I Environmental application filed with the B.C. Government for production at the Minnova-Rea silver mine on Samatosum Mt., 35 miles north east of Kamloops, B.C., reveals plans to mine by open pit for the initial 2.5 years at a rate of 465 tons per day with an average grade of 33.6 oz.silver/t. Capital costs are estimated at $25,000,000 Cdn. and average annual mine site operating costs are projected at $12,500,000. Silver production in each year of the first two years is projected at 5,100,000 oz.troy at a cost of $2.43 Cdn. per ounce. The third year is a transitional period with ore coming from both open pit and and from underground. The fourth year and one-half of the fifth year will take production from underground. Overall, the average grade is expected to be 24.8 oz. per ton.

Pilot plant tests on a 50 ton bulk sample confirmed high rates of recovery in three concentrates, copper-silver-gold; lead-zinc-silver-gold, and zinc with minor silver. In the initial two years the mine will add almost 400 tons of new silver to Canada's production.

UNIVERSAL TRIDENT INDUSTRIES LTD.(UTI-V)
CARIBBEAN RESOURCES CORP.(CBC-V)
ACHERON RESOURCES LTD.(ACZ-V)

EARLY START TO VERNON AREA- EXPLORATION PROGRAMS REPORTED Ronald H.D. Philip, president of Acheron, Universal Trident and Caribbean has reported the companies have acquired claims in the area of the former producing Kalamalka Gold Mine, the largest producer in the area, near Vernon, B.C. The 118 units optioned by Universal Trident are 1.5 km east of the Kalamalka Gold mine, and cover a major contact zone of Shuswap metamorphics to the west and granitic intrusives to the east. The prime targets of exploration activity will be regional shear zones associated with possible detachment faults. The surrounding areas have shown numerous shear-hosted gold bearing veins, including free gold associated with regional shear systems.

Caribean has optioned 84 units the main feature of which is its proximity to known placer deposits.

Acheron's 130 units are adjacent to the Silver Star recreation area, and feature a number of major shear structures, the largest of these trends north-west across the property and is intersected by other shear zones which trend east-west. The Silver Star recreational area to the east of the Acheron property has a history of gold, copper and cobalt showings. One of the shears which cross the property has major showings to

ALMADEN RESOURCES CORPORATION(AMH-V)

BASAL TILL DRILL PROGRAM SHOWS- STRONG GOLD SILVER ZINC VALUES Four of the 26 basal till drill holes on the Munro Lake property of Almaden Resources contain in excess of 1,000 parts per billion gold. These values take on increased importance as a result of recent values on the Huntington property 35 miles to the north and on the Oka property 10 miles to the northwest. The best of the 1988 holes was 88-9 with 1,815 parts per billion gold. Silver and zinc values are also very high in some of the samples. Hole 88-12 yielded a till concentrate sample that contained 1,325 parts per billion gold, 1210 parts per million silver and 6,800 parts per million zinc. Air photographs show a strong northeasterly trending lineament that crosses the area of anomalous samples that have a strike length of over one mile. Overburden in the area is about 25 feet thick. The company is planning additional overburden drilling and trenching.

35 Km N. of Penticton

LEGION RESOURCES LTD.(LGN-V) has acquired by staking 3 mineral claims formerly held by Cominco. The property is located in the Nelson Mining District in the East Kootenays, B.C. and comprises a total of 28 units.

PARALLAX DEVELOPEMNT CORPORATION(PLX-V)
AU RESOURCES LTD.(AUE-V)

Parallax 90% and Au Resources 10% have completed 1[illegible] drill holes testing coincident geochemical and geophysical anomalies on the Au property and on Parralax'[illegible] 100% owned Contact property on McNeil Peninsula, on th[illegible] east side of Flores Island, 25 km north of Tofino on Vancouver Island, B.C. The drilling outlined a zone 20 m by 900 m strike length. Rock sampling resulted i[illegible] narrow quartz sulphide veins that assayed 11.388 oz gold/t and 20.48 oz. silver/t.

CONSOLIDATED BOUNDARY EXPLORATION LTD. (CBX-V)
GRAND FORKS MINES LTD. (GFK-V)

MAP PRINTED OVERLEAF- The map details the Golden Crown workings near Greenwood, B.C., a joint venture between Consolidated Boundary Exploration Ltd. and Grand Forks Mines Ltd. Story in GCNL No.142, P.1, 25Jul88.

82M244

GCNC No 1, 1989

Jan 3/89

REA GOLD CORPORATION(REO-T,V; REOGF-Nasdaq)
HIGH GRADE SILVER MINE READIES FOR PRODUCTION
CONSTRUCTION OF $32,200,000 PLANT UNDERWAY TOWARDS
PRODUCTION AT 450 TONNES PER DAY IN JUNE 1989

Larry W.Reaugh, president of Rea Gold Corp., in a recently published progress report reviewed the Samatosum silver mine construction progress and cash flow projections. On Oct.26, 1988 Rea Gold received formal notice of Minnova's intention to place the mine into production at 450 tonnes per day by June 1989, at an estimated capital cost of $32,200,000.

The property is located between 4,500 feet and 5,350 feet elevation on Adams Plateau, 28 miles NE of Kamloops, 250 air miles north of Vancouver, B.C. Rea Gold holds a 30% working interest in the mine and a 5% net smelter return royalty. Reserves have been calculated at:

661,000 tons with an average grade of:
32.08 oz. silver/t, 0.052 oz.gold/t, 3.5% zinc, 1.7% lead and 1.2% copper.

The diluted reserves are estimated at:

773,600 tonnes with an average grade of:
831 grams/tonne silver, 1.5 grams/tonne gold, 1.0% copper 1.4% lead and 2.9% zinc.

Approximately 50% of these reserves will be mined by open pit in the first three years. The capital cost of the plant is estimated at $24,700,000 plus $7,500,000 for development operating costs and tune up for a total of $32,200,000, of which Rea's shares is $9,600,000. During 1987, Rea raised in excess of $10,000,000 to provide its share of capital costs. At June 30, 1988 Rea Gold had current assets in excess of $10,000,000 including $9,000,402 in cash and short term deposits. DCC Equities Ltd., a unit of Dynamic Capital Corp. has recently reported purchases of 15.2% or 1,668,982 of the 10,954,800 shares of Rea Gold issued at Oct.31, 1988.

On Nov.1,1988, the mill, office building, dry and ancillary facilities sites have been logged and cleared. Blasting and leveling was underway for the mill building foundations and other buildings. The mill building was scheduled to be erected and closed-in by Dec.31, 1988. The tailing pond area has been stripped and was ready to start filling for dam construction. Logging at the mine open pit was nearing completion with stripping of overburden expected to start by year end. A new 8 km mine access road and the power line right of way and towers were under construction.(SEE TABLES OVERLEAF SHOWING CASH FLOW PROJECTIONS TO REA FROM THE SAMATOSUM SILVER MINE AT VARIOUS SILVER PRICES.)

The Discovery zone, 100% owned by Rea Gold, is 3,000 feet to the southeast of the Samatosum deposit and has mineable open pit and underground reserves of 160,000 tons grading 0.247 oz.gold/t, 3.49 oz.silver/t, 4.99% zinc, 3.72% lead and 1.06% copper. Underground exploration has shown higher gold values than indicated by diamond drilling. Metallurgical and mineralogical research work on the ores from the Discovery zone, including test batch bio-oxidation methods has provided encouragement.

Rea Gold recently bought 475,000 shares of Fury Exploration Ltd. at 27¢ each and acquired an option to earn a 50% interest in the Fury property by bringing it into production by Dec.31, 1990. Fury holds a heap leach silver mine at Grantsville, near Gabbs, Nevada. Reserves are estimated at 268,000 open pit tons grading 4.68 oz.silver per ton, of which 2.8 oz.silver/t are recoverable by heap leaching. This reserve is stripped of overburden and is ready for mining. The ore is available to a heap leach with a ? waste to 1 ore stripping ratio. There are 120,000 tons with an estimated silver content of 2.7 oz./ton, on 30 foot high heaps now on the property. A recent report by Marston & Marston Inc., consultants to Rea Gold, estimated over 800,000 oz. of recoverable silver in the reserves and heap. As well the property has a geological environment with substantial additional tonnage potential. There has been 95,000 oz.silver recovered from this heap. The operation has been shut down since May 1988. It is estimated that a further 60,000 to 100,000 oz. silver can be extracted from the heap to provide a 60% recovery of the contained silver. The capital cost to resume production is estimated at $900,000 which would provide a rapid pay out. Rea will consider resumption of production when warranted by the price of silver.

Rea and Verdstone Gold Corporation each hold a 50% interest in the 28,000 acre CK property located 43 km northeast of Clearwater, and 140 km. north of Kamloops, B.C. The property includes showings of zinc rich massive sulphides traced over a 35 km strike length. Drill inferred geologic reserves are 1,643,000 tons grading 8.60% zinc, 1.4% lead, 0.25 oz.silver/t, with a value of $132.00 per ton. Glanville Management Ltd. has evaluated the properties of Verdstone Gold Corporation, which are the 50% interest in the CK project and a 40% interest in the Goldy property near Carmacks, Yukon, at $1,200,000. Based on this evaluation, Rea Gold has agreed to buy these interests for 270,000 treasury shares and $125,000.

The Goldy property near Carmacks, Yukon, is held under an option to Rea to earn a 51% interest, of which Rea, the operator, can earn 60% or 30.60% net, and Verdstone 40% or 20.40% net property interest. A 13 hole drill program in 1988 identified a number of zones of commercial and near commercial gold values, the best being 6.6 feet of 0.22 oz.gold/t; 19.7 feet of 0.133 oz. gold/t and 9 feet of 0.13 oz.gold/t. This property covers the same geological structure and holds a similar open pit potential as the adjoining property held by Antoniuk Perman Resources where open pit reserves of 4,100,000 tons grading 0.033 oz.gold/t have been reported. Recent exploration on other adjoining properties has located new high gold values which suggests similar targets could be found on the Goldy claims.

cont...

82M244

Rea holds a series of options to acquire a 100% interest, subject to property exploration expenditures and a 2% net smelter return royalty, to acquire the Flap gold skarn project of some 30,000 acres in the Nicola and Vernon mining divisions about 40 miles southwest of Vernon, B.C. The project lands have been explored by soil sampling, to locate 15 anomalous areas. Geologic mapping has traced a silicified volcanic unit about 10 feet wide across the claims that carries copper, zinc and pyrite. The unit has a potential for a syngenetic exhalitive gold or polymetallic sulphide deposit. The induced polarization survey confirmed the structure as a drill target. A suite of quartz vein material, 5 cm or so wide on average, were collected over a 100 meter radius and assayed: 0.77; 0.67; 0.35; 0.096; 0.051 and 0.046 oz.gold/t. A program of bulldozer trenching and drilling is planned. Ultramafic dikes have been located on the property which has prompted new emphasis on the platinum potential.

82M244

REA GOLD CORPORATION(REO-V,T:REOGF-Nasdaq)

PROTON SYSTEMS AWARDED MILL CONTRACT - Rea Gold has been notified by the joint venture partner Minnova Inc. that Proton Systems Ltd. has been awarded the contract to design and construct the mill and ancillary facilities for the Samatosum silver mine, 35 miles northeast of Kamloops, B.C. Work started on July 28,1988. The contract is for engineering, procurement and construction management of a mill with a capacity of 465 tons per day. Concurrently, development of the open pit and tailings facilities are underway, however, these aspects of the project are being handled in-house and by other consultants. Rea Gold has a 30% working interest plus a 5% net smelter royalty. Minnova, the operator, has a 70% working interest.

A critical review of the conceptual engineering has started. This review, along with the information required for the application of permits, roads and power lines, is the priority so that construction on site may start about Sept. 15 for completion by May 15,1989. It is anticipated the mill will be commissioned and fully operational by June 15,1989, all subject to government permits being granted on a timley basis.

IMPERIAL METALS CORPORATION (IPM-V,T,M)

PHASE 1 EXPLORATION AT CARIBOO BELL COMPLETED - Imperial Metals Corporation has completed phase 1 of a $1,000,000 exploration program at the 13,300 acre Cariboo Bell property located between Polley Lake and Bootjack Lake, 56 km northeast of Williams Lake near Likely, B.C.. Cariboo Bell is a porphyry deposit where six copper zones have been outlined. Phase 1 completed detailed geologic mapping and rock chip sampling on the central zone. Trenching in the vicinity of previuos drilling outlined extensions to the gold mineralization encountered in drill holes. A total of 6,162 feet of diamond drilling has been completed in 42 holes with assays expected shortly.

A 15,000 foot diamond drill program will start in the Fall to further test the gold rich zones. Ore reserves currently stand at 128,000 tons grading 0.31% copper and 0.012 oz.gold/ton.

Imperial has earned a 17% interest in Cariboo Bell, which may be increased to 29.89% through further spending. Golden North holds 38.41% and the remainder is held by other Imperial Group entities.

OSLER RESOURCES INC.(OSL-V) has terminated the agreement with Telogos International Inc. to provide the capital to build and make operational the four ED FM radio stations in Washington and Oregon. The necessary capital funds were not available. It is anticipated that other projects in videovision and associated fields will be pursued at a later date. Dr. J. Kramer will not be continuing as a director. Osler has acquired the Gillies 3 mining claim near Adams Lake, Kamloops, B.C. from Grant Howes for 100,000 shares.

BULLION RANGE EXPLORATION CORP. LTD.(BIW-V)

ACCESS ROAD COMPLETED - Stewart Meek, president, reports that Bullion Range Exploration Corporation Limited has been advised by Nevin Sadlier-Brown Goodbrand, project managers, that the access road to the Debbie properties, outside Nelson, B.C., has been completed. While constructing the road the bulldozer uncovered 6 anomalous zones. Samples taken from these zones are in for assay with Chemex Labs. Drilling in these zones will start in August, after the geological and geo-chemical data is analyzed.

ARMADA GOLD AND MINERALS LTD.(ARM-V) has started phase 1 exploration on the 171 unit, 10,550 acre Horsefly property in the Horsefly area, Cariboo Mining Division, B.C., adjoining the Frasergold property. The program will test for gold values in the black phyllite horizon and stratabound mineralization.

Pioneer rebuilding after Puffy Lake problems

VANCOUVER – A key item on the 1989 agenda for **Pioneer Metals Corp.** (TSE) will be rebuilding financial strength, President Robert Willis told shareholders at the recent annual meeting.

The company's financial difficulties stem from its unprofitable Puffy Lake gold mine in Manitoba where mining and milling operations were recently suspended because of sustained production shortfalls. Pioneer reported a net loss for 1988 of \$25.09 million after a \$25-million write-down in the carrying value of the 100%-owned mine.

Although the company is studying ways to make the operation profitable, Willis said the mine would not reopen until the company has improved its cash position.

"We would have to look very closely at where the money will come from," he said, noting that additional capital would be required for new development work.

"We think the chances of starting up again are good, however, we would need a reasonable gold price and we may also have to look at processing ore from other projects in the area," he said.

Another reason for suspending operations at Puffy Lake was to allow financial resources to be directed to the Premier Gold project near Stewart, B.C., which is now in the start-up phase.

In order to fund its 40% share of the projected \$88 million capital costs, Pioneer took out a 52,000-oz gold loan repayable over five years that yielded \$28 million.

Last year Pioneer also completed the sale of a \$12 million convertible debenture to **Pegasus Gold Inc.** (TSE). If the debenture and warrants are fully exercised, Pegasus would have a 20.3% stake in Pioneer.

The Premier Gold project (which Willis noted was \$5 million over budget) is expected to be in commercial production by late summer or early fall. At 2,200 tons per day, the mine is expected to produce 77,000 oz gold and 900,000 oz silver annually for the first four years of full production.

Willis said an underground program is in progress to develop reserves that could be added to the lower grade open pit material to enhance production and extend the current 11-year mine life. Recent results include 27.9 ft of 0.237 oz gold and 1.05 oz silver and 13.1 ft of 0.226 oz gold and 0.15 oz silver.

If Puffy Lake was the bane of 1988, Willis called the 50%-owned Stibnite heap leach gold mine in Idaho "a pleasant surprise." Geological reserves at the seasonal open pit mine were upgraded to 11.2 million tons grading 0.037 oz gold, while mineable reserves of 2.7 million tons at 0.037 oz gold added four years of mine life. This year, Pioneer and several other mining groups intend to evaluate the potential of the sulphide resource in the entire Stibnite Valley.

Pioneer is also reporting exploration success at its 100%-owned Bonito project in New Mexico. The company's 1988 program identified reserves suitable for open pit mining in the Blue Front zone that will be upgraded this year to the proven/probable category.

The company recently acquired two exploration projects in British Columbia where the focus is on finding gold-enriched zones adjacent to existing copper-gold porphyry deposits.

Campbell sees first profit in almost six years

For the first time in almost six years **Campbell Resources** (TSE) made a profit. That was the surprising news at Campbell's recent annual meeting in Toronto where first-quarter net income of \$660,000 or 1¢ per share was reported.

"While this is a small profit, it is a step in the right direction," said President John Kearney. Last year the company had a net loss of more than \$67.6 million or \$1.25 per share.

Last year, Campbell increased its gold production to 61,000 oz from 52,000 oz the year before, but production costs increased to \$362(US) per oz in 1988 from \$348. Copper production fell to 4.9 million lb from 5.3 million lb.

If Campbell continues to recover from the cost of a write-down in the carrying value of its mothballed Henderson II operation, much of the credit will go to an \$18.2 million expansion program at the Joe Mann gold/copper mine in Chibougamau, Que., according to Kearney.

In a bid to increase the mine's production to 100,000 oz gold from 36,000 oz last year, Campbell is attempting to raise \$30 million through a rights offering involving affiliate **Northgate Exploration** (TSE) and the Montreal-based Claridge Group.

After examining several alternatives, Campbell has decided that the best way to cut costs at Joe Mann from \$242 per oz in 1987 and increase throughput is to sink a new 2,050-ft shaft.

"Scheduled to be finished by mid-1990, the new 4-compartment shaft will enable the mine to produce 1,600 tons per day as early as October 1990 and a maximum 1,800 tons per day by April, 1991," said newly appointed executive vice-president and chief operating officer Ken Hill.

As a result of ongoing surface and underground exploration, Joe Mann reserves stand at 3.7 million tons grading 0.24 oz gold per ton. Most of those reserves are located in an area 3,000 ft east of the shaft in a mineralized structure that stretches for more than six miles.

"By the end of this year, development work on the 1050 and 1650 levels will convert about 800,000 tons from the possible category and increased proven and probable reserves to almost two million tons," said Hill.

Many of the 130 workers needed for the Joe Mann expansion program will come from the S-3 gold mine in Chibougamau which will remain open until the end of 1989 unless gold prices drop to \$350.

Having produced 11,500 oz gold and 840,000 lb copper in 1988, the S-3's performance is being closely monitored. "It was originally anticipated that the S-3 mine might be closed at about this time (May 11)," said Kearney.

"However, operating costs have been reduced, grades have improved somewhat and additional reserves have been outlined which have prolonged the life of this operation," he said.

Under a rights offering consisting of a \$20-million equity portion and \$10 million in bank debt, shareholders can subscribe for one new share at 85¢ each for every f...

Minnova drops lawsuit against Pacific Minesearch

VANCOUVER – Legal action initiated by **Minnova Inc.** (TSE) against **Pacific Minesearch** (VSE) was dropped as the two companies worked out a mutually acceptable joint venture agreement on the Victory project near Barriere, B.C.

The legal dispute related to an earlier deal between the two companies which Minnova saw as final and binding, but which Pacific Minesearch viewed only as a letter of intent.

Now that these differences have been resolved, Minnova can earn a 70% interest in the Victory property which is strategically located directly north of its 70%-owned Samatosum polymetallic mine project.

Owned 30% by **Rea Gold** (TSE), the Samatosum deposit has reserves of 661,000 tons grading 32.0 oz silver and 0.052 oz gold, 1.2% copper, 1.7% lead and 3.5% zinc per ton. The mine is expected to be in commercial production in June, with Minnova as operator.

082M 244

To earn its interest in the Victory claims, Minnova must spend \$600,000 on exploration and development and make cash payments totalling \$80,000 by 1992. Under the terms of the agreement, at least \$100,000 must be spent by the end of this year to keep the option in good standing.

Pacific Minesearch will assume a 30% working interest in a joint venture after Minnova completes its earn-in. If this is diluted to 10% thereafter, Pacific Minesearch would retain a 2% net smelter return royalty.

A work program that includes diamond drilling is scheduled to begin on the property soon.

Tri-Pacific Resources has changed its name to International Member-

George Cross News Letter

NO.56(1989)
MARCH 21, 1989

104B

PIONEER METALS CORPORATION (PSM-V,T)

UFFY LAKE MINING & MILLING - JSPENDED FOR 2/ 3 MONTHS

Shareholders rights which expired Feb.14,1989 raised net proceeds of $8,630,275 or Pioneer Metals. These funds provide the capital, perating and exploration cost requirements for: the 40% wned Premier gold mine at Stewart, B.C.; the 50% owned :ibnite gold mine in Idaho; and the 1989 exploration or the Bonito gold/silver project in New Mexico. (SEE :NL No.40, p.1 27Feb89 for rights offering details).

Pioneer president Robert D. Willis said the Puffy ke gold mine in north central Manitoba continues to n at an operating loss. Lack of sufficient underound development ahead of active stopes has resulted 500 tons per day of stope ore and 300 tons per day of velopment ore being co-mingled to provide sufficient ll feed. The plant has a designed capacity oif 1,000 ns per day. This has contributed to lower than pected mill feed grade. Operating costs per ton lled have been as predicted. But, without sufficient ope ore, the mine has continued to operate at a loss.

The company plans to eliminate the loss at Puffy ke gold mine by shutting down the mine and milling for to 4 months to develop an optimum operating plan.

The company's 40% owned Premier gold mine is on hedule to start operations in late April 1989 and ach commercial production levels by September. erage total production for the first 4 years of full oduction should be 77,000 oz. gold and 900,000 oz. lver. Capital costs on completion are expected to out $88,000,000. As part of the exploration progam on lower levels of the Premier ore body, new relopment work is planned in 1989 to access higher ide areas below the pit.

82M 244

REA GOLD CORPORATION (REO-V,T;REOGF-Nasdaq)

SAMATOSUM EXPLORATION BUDGET & CONSTRUCTION PROGRESS REPORTED

- Minnova Inc. 70% has notified Rea Gold 30% and a 5% NSR, that the exploration budget for the Samatosum property, 28 miles northeast of Kamloops, B.C. will be $1,000,000. Of the total, $800,000 is required for about 50,000 feet of diamond drilling, and $200,000 for geological mapping and geophysical and geochemical surveys. The drilling will test a possible 2 km strike length of the Samatosum horizon, targets within the barite and SMS zones and a zinc anomaly. Further work will be done to extend the 1988 drilling program along strike to the northwest in the Rea Horizon. A small program of one or two relatively deep holes, ranging from 800 to 1,000 metres, will test the entire mineralized package from the Sam footwall to the Rea hanging wall rocks. The geological, geophysical and geochemical surveys will be conducted over the eastern portion of claim HN-1, to extend coverage to the limestone contact. The first phase, with a budget of $200,000, started on March 12, 1989. It consists of 10,000 feet of diamond drilling in six holes and will include two deep holes designed to increase geological understanding of the deposit and four holes to test targets within the previously drilled barite zone.

Good progress is being maintained with the continuing development and construction of the 500 tons per day mill and ancillary facilities. Completion of construction and initial mill tune-up is scheduled for the latter part of June. Work on the open-pit started in the first week of March and stripping will start in April. To date, the project is on schedule and below the budget estimate of $32,200,000.

Cassiar looks to exceptional year

VANCOUVER – With copper and asbestos prices at their highest levels in years, 1989 could well be another exceptional year for **Cassiar Mining** (TSE). Indeed, first-quarter earnings of $7.4 million or 40¢ per share were 6-fold higher than the same quarter a year ago.

At the company's recent annual meeting, James C. O'Rourke, president, said that Cassiar's "cash flow and net earnings will continue to improve throughout 1989." He also predicted that production and sales from its Cassiar asbestos operation "will remain at record levels" and costs would drop. "The 1989 production has been sold at prices 5% higher than those of last year," he added.

104P 029

Development of the McDame asbestos deposit is ahead of schedule and nearly on budget, he said. A number of key personnel have been hired with experience in underground block caving, the mining method to be employed at McDame. Over-all costs for McDame are estimated to be $48.2 million and the project will add 10 years to the operating life of the mine.

104P 005

The Cassiar operation achieved a 35-year production record of 106,065 tons of fibre last year and "1989 is projected to exceed this record slightly," O'Rourke said. A wet-milling pilot plant was commissioned last August which has been modified and will now produce about 4,000 tons of fibre per year. A study is planned this year on the feasibility of treating portions of the 14-million-ton tailings stockpile which is estimated to contain 3.5% recoverable fibre.

Discussing last year's purchase of the Similco copper mine near Princeton, B.C., O'Rourke noted that mill throughput has been increased by 25% to 25,000 tons per day. Copper production is expected to continue at an annual rate of 60 million lb and he expected copper prices to average over $1.10(US) per lb for the year. 92HSE001

Cash flow from Similco in 1988 was sufficient to cover the acquisition price from Newmont Mines which has since pulled out of Canada. The $5.4-million debt to B.C. Hydro was also paid off and O'Rourke said "the only outstanding obligation from this acquisition is the return of 5.6 million pounds of copper in the concentrate on June 1990."

Earlier this year Cassiar sold its Bissett gold mine in Manitoba to **Rea Gold Corp.** (VSE). The purchase price was 2.3 million shares of Rea Gold and Cassiar made available to Rea Gold a $4-million loan secured by a convertible debenture. Assuming the debenture is converted, Cassiar will own approximately 22% of Rea Gold which has a 30% interest in the Samatosum project, now under development by **Minnova Inc.** (TSE). The mine, which should be producing this June, is expected to put out over five million ounces of silver and significant amounts of copper, zinc and lead. 82M244

Geddes to spend $10M

114P002

Toronto-based **Geddes Resources** (TSE) plans to spend $10.8 million this year on its Windy Craggy copper-cobalt-gold prospect in northwestern British Columbia.

The aptly named Windy Craggy property is located in rugged, mountainous terrain, near the Alaskan border.

Underground exploration on the remote property has been ongoing since 1987 and has begun to produce tangible results.

Recently calculated drill-indicated and possible reserves are estimated at 77 million tons of 2.4% copper, 0.007 oz gold, 0.082 oz silver per ton and 0.08% cobalt. The ultimate reserve potential of the deposit is projected to be at least double this tonnage.

Earlier estimates had suggested the deposit contained up to 300 million potential tons grading 1.5% copper, with additional values in cobalt and gold.

The company says its focus this year will be to delineate the ore reserves with greater precision. Discerning the geometry of the large deposit has proved to be a challenge in the past.

The massive sulphide mineralization consists of pyrrhotite, pyrite and chalcopyrite. Cobalt values correlate with the pyrrhotite. The host rocks consist of Mesozoic volcanic

underground drilling and tunnelling, as well as studies on mining methods, and metallurgical characteristics of the ore. Other studies will be done on site locations, access routes, and environmental implications of mining the deposit.

Management says it is considering open pit mining of the upper portion of the deposit followed by large scale bulk underground mining of the lower portions. A gold-enriched zone may be mineable as a separate operation on a smaller scale, the company says.

Last year, **Northgate Exploration** (TSE) became a major investor in Geddes Resources and currently holds 31% of the equity of the company.

The Windy Craggy deposit was initially discovered in 1958 by prospectors working for **Falconbridge Ltd.** (TSE), who traced copper-mineralized boulders back to their source on the 6,500-ft high Windy Craggy Mountain. A subsidiary of Falconbridge retains a 22.5% interest in the net proceeds from any future production.

Since Geddes began working on the property in 1981, it has spent a total of $21.9 million on exploration.

Shares of Geddes Resources have traded at $1.35 recently on the Toronto Stock Exchange. The com-

Internatio
set by Pla

VANCOUVER – An ar international program of n development is expected t late into increased gold prc and a lower average produc for **Placer Dome Inc.** (TSE)

Earnings from its corr gold mining operations w last year by higher producti and a weaker U.S. dollar.

Although improved bas earnings and the sale of ments in Falconbridge Ltd. Intyre Mines boosted cons net earnings to a healthy million in 1988, earnings fr mining operations decli $98.3 million, some $24.3

Shotcreting technology meet

Photo by The North

About 125 mine operators recently met in Sudbury, Ont., to see th developments in shotcreting technology. Five mine operators relat experiences and shotcreting machines from three manufacturers display. The seminar was organized by the Mining Research Direct co-ordination with the University of Toronto and the Geomechanics R Centre.

FirstMiss Gold's profit up

VANCOUVER – Now that it has a new mill up and running at its Getchell gold mine project in northern Nevada, **FirstMiss Gold Inc.** (NASDAQ) is reporting a significant increase in its net earnings and operating profits.

The company announced earnings of $4.4 million(US) or 25¢ a share for the nine months ended March 31, compared to $1.6 million (11¢ a share) for the same period last year. Pre-tax operating profits were $3.9 million on net sales of $11.1 million, up from $2.5 million on sales of $7 million the previous year.

Oxide ore was used initially cost less to produce and than will the sulphide rese

The new 3,000-ton-per-d at Getchell began productic oxide ore in February and w begin processing the more dant sulphide reserves whi tain relatively high levels of

The first of three autoclav using pressure oxidation to sulphide ores is already on The company said start-up h routine and is progressing on ule. All three autoclaves pected to be on stream by J

The company spent $1.8

82M 244

THE SAMATOSUM DEPOSIT

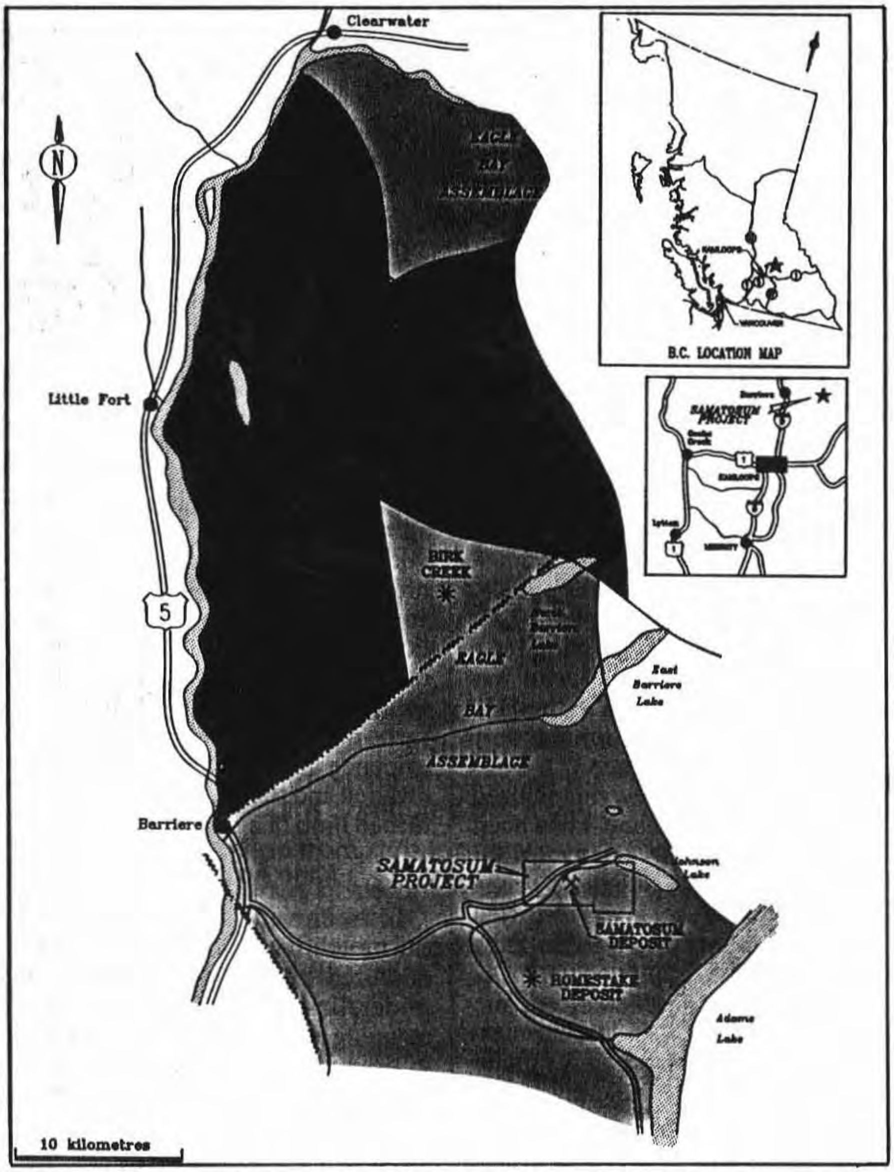
By Ian Pirie

Situated in the rolling Shuswap Highlands, 60 km northeast of Kamloops in south-central British Columbia (right), the Samatosum deposit is becoming the first of what Minnova Inc. believes will be a number of mines in this under-explored region. Discovered in 1986, it is under development, with production scheduled for the third quarter of 1989. Current reserves are an undiluted 634,984 tonnes grading 1,035 g silver per tonne, 1.9 g gold per tonne, 1.2% copper, 3.6% zinc and 1.7% lead.

The area between Barriere (on the North Thompson River) and Adams Lake (30 km to the east) has long been recognized by prospectors and geologists as a likely hunting ground for mineral deposits. The Homestake barite/sulphide deposit was found in 1893, numerous small stratiform massive sulphide deposits were found in the Birk Creek area in the 1920s and, in 1978, a massive sulphide deposit containing at least two million tonnes of 1%-2% copper was discovered on Chu Chua Mountain. Still, none of these ever resulted in significant production, and many thought of the area as consisting of teasers and red herrings without substance.

However, the continual improvement in access by local logging companies assisted prospectors as they continued to search the area. In the summer of 1983, Al Hilton and Roy Nicholls of Kamloops, B. C., noted a red color in the soil of a recent clearcut. They borrowed a nearby dozer to do a little digging and found massive sulphides over a width of 10.5 ft. Assays of this material produced gold values in excess of one ounce per ton as well as significant silver, copper, lead and zinc values. This area became known as the Discovery zone.

This find caused a stir in the exploration community, and in a flurry of activity that followed, Rea Gold Corp. picked up the property and optioned it to Corporation Falconbridge Copper (now Minnova Inc.).



SAMATOSUM PROJECT

Minnova Inc.

Early exploration was not encouraging as the first seven drill holes, in the immediate area of the discovery, failed to intersect significant sulphides. The eighth hole hit 2.5 m of barite and 0.5 m of massive sulphides, but this was 300 m farther up the hill and not connected to the Discovery zone. It was the only significant intersection of the first 20 holes.

Drilling continued and, after 18 months, two small but fairly high-grade massive sulphide pods (one of which has associated massive barite) were outlined. However, there was a metallurgical problem. The gold is very fine-grained and held in arsenopyrite. At about this time, Rea Gold assumed control of a small concession area surrounding the known mineralization and Minnova received the right to earn an increased interest in the rest of the property. (Rea Gold has continued to explore the concession. Their most recent published estimate of the mineralization is 169,000 tons of 0.27 oz gold per ton or 154,000 tonnes of 9.3 g gold per tonne.)

Up to this point, Minnova's drilling on the property had been restricted to a small area and had been target-specific. The original discovery was marked by a very strong gold/arsenic soil anomaly and responded well to very low frequency (VLF) methods. Drill holes had been targeted either on the known mineralized horizon or on nearby gold/arsenic and VLF anomalies. The new deal enabled Minnova to take a broader look at the claims.

Mapping in 1984 and 1985 produced a general understanding of property stratigraphy. In addition, horizontal-loop electro-magnetic (HEM) surveys defined several long strike-length stratiform conductors. One of these was known from drilling to be a graphitic argillite in the immediate hangingwall to the Discovery zone horizon.

Another conductor, about 600 m to the northeast, had no gold or arsenic anomalies associated with it, but it did have erratic, high values of lead, zinc and silver. Drill hole RG-37 hit 3.5 m of massive barite assaying 164 g silver per tonne. The conductor was clearly an argillite but, as at the Discovery zone, mineralization was very close to it in the sequence.

By early 1986, the new mineralized horizon (the "Silver zone") had been tested at 100- to 150-m intervals for more than 2.6 km. But there was a 400-m gap where access was restricted by steep and rocky terrain. In July, 1986, a drill pad was built on the rocky hillside; RG-64 was collared, and one metre of massive sulphides was intersected, grading 2,700 g silver per tonne (79 oz per ton), 3.8 g gold per tonne (0.11 oz per ton), 9.3% copper, 7.8% zinc and 6.9% lead. Samatosum had been discovered.

Regional Geology

The Samatosum deposit is in a structurally complex sequence of Palaeozoic metavolcanic and metasedimentary rocks named the Eagle Bay Assemblage (Figure 1). This assemblage, described by Schiarizza and Preto (1987), is on the western margin of the Omineca Crystalline Belt between high-grade metamorphic rocks of the Shuswap Metamorphic Complex to the east and rocks of the Intermontane Belt to the west. It consists of mafic to felsic pyroclastics interbedded with limestone, chert, greywacke, argillite and conglomerate, intruded by granodiorite and quartz-monzonite of the Cretaceous Baldy Batholith. It is locally overlain by Tertiary volcanics and sediments.

All pre-Cretaceous rocks have undergone several phases of deformation. This has resulted in several phases of folding, numerous faults and a strong penetrative foliation. Metamorphic grade is lower greenschist facies except for areas adjacent to the Shuswap Complex to the northeast, where amphibolite grade is reached.

The age of the Eagle Bay is poorly defined. It appears to range from Cambrian to Late Mississippian. As a result, parts may correlate with rocks of the Kootenay Arc in southeastern British Columbia and the Barkerville Terrane in the Barkerville/Cariboo River area. The age range of the assemblage strongly implies major unconformities and/or structural breaks.

The Samatosum deposit lies within a mixed volcanic/sedimentary sequence at or close to a significant break between a volcanic-dominated and a sediment-dominated depositional environment. Although sediments form the structural footwall and volcanics the structural hangingwall to the mineralized horizon, structural evidence indicates the sequence is inverted and the deposit is on an overturned limb of a recumbent syncline.

Mine Area Geology

In the immediate area of the deposit the protolith of the host rock is often obscured by intense alteration and mineralization. However, detailed mapping and core logging are starting to produce an understanding of the depositional environment.

The deposit is on the overturned limb of a major syncline. The oldest stratigraphic units are the structurally highest. The stratigraphic sequence consists of pyroclastics, epiclastics and sediments, all altered to varying degrees.

Pyroclastic rocks are mafic in composition and typically contain matrix-supported, subangular to subrounded blocks up to 15 cm in diameter. These blocks are the same composition as the matrix. Locally they appear vesicular and quite stretched. Basaltic flows are rare in the sequence and unknown in the vicinity of the deposit. However, fragment-poor tuffs are common and become the predominant rock type toward the stratigraphic top of the pyroclastic unit. Quartz-carbonate veins are common and locally contain small amounts of galena, sphalerite and, more rarely, chalcopyrite.

Hydrothermal alteration is generally restricted to a stratiform band at the top of, and as much as 30 m down into, the basalts. It consists almost entirely of sericite with minor amounts of carbonate. To date, no crosscutting, pipe-like alteration feature has been recognized at Samatosum. The altered rocks contain up to 20% pyrite while unaltered rocks rarely contain more than 1%.

In places, the top of the mafic sequence is marked by a gradation through sericitic tuff to "muddy tuff," but usually there is an intervening chert unit. The chert is a well-layered silica gel with laminae of sericitic tuff, argillite and, occasionally, sulphide. It shows evidence of both primary slumping and tectonic folding and brecciation. The rapid changes in thickness of the chert are believed due to pooling within fault-controlled topographic lows on the ocean floor.

The field term "muddy tuff" was established early in the exploration of the property and has been retained despite being a misnomer. It refers to a unit of uncertain parentage which, in drill core, appears as a homogeneous, muddy grey-colored, nondescript rock. Subsequent drilling away from mineralization has revealed it to be a predominantly epiclastic to sedimentary unit with a minor tuffaceous component. Wackes, argillites, cherts, mafic tuffs and debris flows comprised of small (less than 2 cm) fragments of every rock type in the area have been homogenized by sea floor hydrothermal activity to form muddy tuff. Alteration mineralogy has not been studied in detail, but is believed to include sericite, chlorite and clay minerals.

Muddy tuff is strongly mineralized. Much of this mineralization is syngenetic to diagenetic pyrite which commonly occurs in concentrations of 20%-30%, although there are locally zones of 80%-plus.

True sediments occur as one thin (10-m) band within the muddy tuff in the immediate area of the deposit. The band becomes considerably thicker along strike to the northwest. It is predominantly a bedded wacke, with muds and silts forming interbeds a few millimetres to several metres thick. Graphitic argillite constitutes a small portion of the sediment volumetrically but is significant because it provides marker horizons which can be traced by geophysics across the large areas of thick overburden. Quartzose grit, which grades into a fine quartz pebble conglomerate, locally provides a good marker for drill hole correlation.

Strong sericitic alteration makes sediments difficult to distinguish from tuffs. Under these conditions, the sediments may contain 20% or more pyrite. Mineralization is usually restricted to thin pyritic argillite beds.

Mineralization

The Samatosum deposit consists of 634,984 tonnes of ore consisting of tetrahedrite, sphalerite, galena and chalcopyrite within a much larger tonnage of dominantly pyritic material. Minor minerals identified include electrum, bournonite, gersdorffite, chalcocite, arsenopyrite and covellite. Virtually all the silver is in tetrahedrite, while the gold occurs as electrum.

Non-ore sulphides contain some sphalerite, galena and chalcopyrite but only minor tetrahedrite. Several holes intersected semi-massive to massive, bedded and brecciated sulphide sections up to 11 m thick, which contain 2% to 3% zinc and 1% copper but with low precious metals contents. In other places, several tens of metres of muddy tuff may be present with 20%-40% pyrite and only parts-per-million levels of zinc, copper and silver.

Ore grade sulphides take one or more of the following forms:

- Massive sulphide bands, generally associated with strongly brecciated bull quartz. The sulphides can be massive tetrahedrite, sphalerite, galena or chalcopyrite or almost any combination of them.
- Pyritic "muddy tuff" cut by zones of silica flooding and fine quartz veinlets containing tetrahedrite and sphalerite.
- Finely disseminated tetrahedrite with or without minor sphalerite in units of high primary permeability and porosity such as quartzose wackes.

Massive sulphide ore is prevalent in the near surface parts of the orebody. Where tetrahedrite is the dominant sulphide, assays of up to 35,000 g silver per tonne (3.5% or 1,000 oz per ton) and 35 g gold per tonne (one ounce per ton) have been returned.

More commonly, silver grades are in the 3,000-g-per-tonne range and gold values 3-4 g per tonne.

Ore associated with silica flooding occurs mainly in deeper parts of the orebody. Tetrahedrite invariably rims sphalerite in 1-5-mm-thick silica veinlets within wider zones of silica enrichment. Typical values are 250 to 1,000 g silver per tonne.

Finely disseminated ore is less common and provides only a small part of the overall tonnage. It is also easy to overlook. In quartzose wackes, it takes the form of finely disseminated tetrahedrite specks fractions of a millimetre in diameter. In some of the more permeable muddy tuff units, it is accompanied by strong sericitization. Subsequent deformation produces a micaceous schist with a silvery color which masks the fine silvery grey specks of tetrahedrite.

The complete orebody is a flat, plunging zone 450 m long by 150 m wide with an average thickness of around 6 m. It is roughly lens-shaped with a thicker core tapering out on the extremities. No obvious metal zonation is present, with material on the flanks often having good grades over narrow widths. Ore margins are sharp, if somewhat irregular. Indeed, the cutoff grade of 250 g per tonne silver is only a factor where narrow, high-grade zones have to be diluted to a minimum mining width (2 m).

Metallogenesis

According to current evidence, the Samatosum deposit does not fit into any classic genetic model. New evidence from open pit mining should answer many of the outstanding questions. However, tentative metallogenic conclusions can be drawn at this time.

Overall, the deposit can be regarded as a traditional volcanogenic massive sulphide model formed on a hydrothermal system exhaling silica and metal-rich solutions into a submarine environment. Locally, the solutions are deposited directly on to the sea floor as massive sulphides or chert. More commonly, the pressure and temperature conditions in this particular basin were such that hydrothermal solutions precipitated out subsurface, altering and strongly mineralizing the host sediment. This produced the muddy tuff unit, in which the primary textures have been obliterated and sulphide content ranges from 1% or 2% to 100%. Chert exists where both sediment and tuffaceous material were silicified.

A second event explains why ore-grade sulphides form only a small part of the mineralized zone. Most sulphide produced by the system is not of economic grade. Semi-massive to massive sulphide sections containing zinc and lead values in the order of 2%-4% over thicknesses of up to 10 m are not uncommon, but if the sphalerite and galena are not accompanied by tetrahedrite, which is often the case, silver values are 30 to 40 g per tonne. Tetrahedrite, where it occurs, is associated with quartz veins and silica-flooded zones. These zones, although stratabound, crosscut lower-grade mineralization and must postdate it. At present, there is no information on the absolute ages.

Preliminary lead-isotope evidence suggests lead in veins is the same as lead in syngenetic sulphides and is Devonian in age. This is also the postulated age of the host rocks. It is unlikely there was any significant addition of lead either during periods of igneous intrusion (Cretaceous to Tertiary) or during tectonic upheaval (Jurassic to Cretaceous).

Because of this, at present it is believed the introduction of the tetrahedrite which carries most of the precious metals occurred shortly after the deposition of the original sulphides. It may have been a final pulse of the same hydrothermal episode. Subsequent deformation redistributed what was there into its present form.

REFERENCES:

Schiarizza, P. and Preto, V. A.; (1987) *Geology of the Adams Plateau/Clearwater/Vavenby Area;* B.C. Geological Survey, Paper 1987-2.

Ian Pirie is a senior exploration geologist with Minnova Inc. in Vancouver, B.C.

The information and ideas presented here are the resuslt of work done by several geologists on the Minnova Inc. exploration team. Their contributions are gratefully acknowledged. Thanks are also due to Minnova management for permission to publish this article.

Ore Horizons features both general and specific mineral deposits articles of current interest. Papers are referred by the Mineral Deposits Division (MDD) of the Geological Association of Canada. Submissions are invited and should be addressed to Dr. W. E. Roscoe, Editor, Ore Horizons, c/o The Northern Miner Magazine. □

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Corona

From Page 1

has spent roughly half of the $500,000 it is required to spend in the first year of its option. A considerable amount of bulldozer stripping was done last year on the Lightning zone by Varna. Surface exposures examined by The Northern Miner revealed pyritic quartz veins in altered and structurally complex volcanic rocks. Highlights from last year's drilling included intersections of 0.32 oz gold per ton over 20.5 ft and 0.18 oz over 14.1 ft.

This year's program should provide a better understanding of the Lightning gold zone and advance an otherwise virtually unexplored property to a more mature exploration level.

On property adjacent to the Corona option, another promising gold bet, known as the Stoger Tight prospect, is being explored by 50/50 joint venture partners **Noranda Exploration** and **International Impala Resources** (VSE). There hasn't been much news coming out of this property recently, but Noranda reports it has been encouraged with the results to date. The company says it is still too early to report any specific ore reserve figures for the property.

In another area, south of the Rambler base metal property, Corona has come up with a new gold find called the Brass Buckle prospect. The showing was found last November by prospecting and follow up of a geochemical anomaly. One surface channel sample yielded 8 oz gold over a 1.6-ft width. Earlier this year, seven drill holes tested the zone at shallow depths, but results were marginal.

Adjacent to the Corona claims, **Cliff Resources** (TSE) has been busy exploring its Gull Pond property where a 6,500-ft drill program was conducted last winter. An interesting high-grade lead sulphide showing was discovered on that property, says Cliff geologist Pearce Bradley. Follow-up work to further test the gold potential of the property is planned for this year once budgets are finalized. Cliff has a total of five claim blocks on the Baie Verte Peninsula.

Cliff also controls the Baie Verte asbestos mine where a new wet process technology is being installed to reprocess the old asbestos tailings, thereby extending the life of the mine. The community of Baie Verte relies largely on the open pit asbestos mine for much of its current employment.

Bridger to build gold mine in Chile

A Chilean firm has been contracted to build a 200 ton-per-day

Rea Gold taking traditional route to production

VANCOUVER — Up until several years ago, the height of ambition for a junior company with a promising property was to strike a joint venture deal with a major mining concern, hopefully with one benign enough to let the junior survive as the project evolved into a mine.

A new crop of independent-minded juniors armed with flow-through funds changed all that, albeit with mixed results. But some industry experts and analysts now say the traditional route of joint venturing with a major has its merits if a reasonable deal can be negotiated.

A junior mining company for close to a decade, **Rea Gold Corp.** (TSE) is aiming for the best of both worlds. The company will make its initial production debut at minimal risk by having experienced mine operator **Minnova Inc.** (TSE) develop its first mining venture.

But even as the 500-ton-per-day Samatosum polymetallic mine near Adams Lake, B.C., begins its tune-up phase, Rea Gold is also busy transforming itself into an operating company to develop the recently-acquired Bissett gold mine project in Manitoba.

While it will be some months before a detailed feasibility study is completed for Bissett, the Samatosum mine is expected to begin commercial production by mid-summer, on schedule and within the budget estimate of $32.2 million.

Minnova will have a 70% interest in the new mine, with Rea Gold holding a 30% interest plus a 5% net smelter return. Reported reserves amount to 661,000 tons grading 32.08 oz silver, 1.2% copper, 3.5% zinc, 1.7% lead and 0.052 oz gold per ton.

A combined open pit/underground operation, the Samatosum mine is expected to produce five million oz of silver each year during the first several years of its five year mine life. Silver production will account for about 65-70% of revenues, with the remainder derived from copper, zinc, lead and gold values.

Although the mine is going into production during a low cycle for precious metals, revenue losses on the precious metal side are expected to be offset by improved base metal prices. In its first full year of production, Rea Gold is expecting cash flow to its own account of between $8-10 million (at current metal prices) after direct mining and milling costs.

"We're very fortunate to have a very high grade deposit sitting at the surface that can be mined in its first years by low cost open pit methods," said Larry Reaugh, president. "We estimate that our break-even point on the project is $2(US) an oz for silver."

Fortunate in that its share of capital costs for Samatosum were raised before the 1987 market crash, Rea Gold began looking for new opportunities to boost production and secure a long term future in mining.

Early this year the company announced the acquisition of the Bissett gold mine from **Cassiar Mining** (TSE). Previously known as the San Antonio, Bissett is a former producer that turned out 1.36 million oz of gold from 4.9 million tons of ore from 1932 to 1968. A 500-ton-per-day mill was built on the property in 1982.

After completing its due diligence, Rea Gold and Cassiar renegotiated the deal several times before settling on a price of 2.3 million Rea Gold shares valued at $3.40 per share and a secured loan agreement of $3 million. If drawn, the funds would be convertible by Cassiar into common shares of Rea Gold, with the price to be determined at that time.

"We took a much more critical look than we might have if gold was $450 per ounce," said Reaugh, "but as buyers we didn't want to spend one dollar more than we should."

Rea Gold's review showed mineable ore reserves below the 26th level to be 1.2 million tons grading 0.22 oz gold per ton, and 301,400 tons grading 0.192 oz above the 26th level. Exploration potential for new reserves of both vein and stockwork types is viewed as excellent.

Rea Gold's due diligence also revealed that capital costs would be about $18.8 million or 38% higher than originally expected, and operating costs $78.53 per ton, or 18% higher than predicted in an earlier feasibility study. Rea Gold's critical evaluation of its own project is expected to continue through the summer.

"We'll be mining Bissett on paper before we spend money to go underground," said Reaugh, referring to the detailed feasibility that is now in progress under the direction of mining engineer Fred Sveinson, vice-president and chief operating officer.

With a high degree of confidence in the reserves, in the continuity of grade, and in the good ground conditions, Rea Gold sees plenty of upside potential at Bissett.

"But we also know what the problems are," Reaugh said, referring to materials handling or the physical aspects of mining and handling the ore. The projected increases in capital costs are for shaft sinking, hoisting, preproduction development, with higher costs for underground mining representing most of the increase in operating costs.

"It looks like the best attack may be to sink an entirely new shaft," said Reaugh. "While this will increase our capital costs somewhat, it will also bring down the operating costs."

According to Sveinson, a number of other alternatives will be evaluated in the bid to reduce operating costs, a critical factor because of gold's prolonged slump.

The company is also considering adding a cyanide circuit to enhance metallurgical recoveries. By the end of the summer, Rea Gold expects to have in place a detailed feasibility study and operating plan.

Sveinson said if the new shaft route is chosen, it would take between 2-2.5 years to sink and have the underground developed. "However there is ore in the upper levels and in other deposits in the immediate area, so it is possible our mill could be going sooner than that," he added.

Rea Gold's geological study of the Bissett deposit will encompass other mineral occurrences in the area. Officials hinted that joint ventures with other companies will likely be developed.

On the corporate side, Rea Gold has found itself positioned between two large shareholders. Cassiar Mining will have about 20% of its shares, assuming it exercises all the options associated with the Bissett mine transaction. Another large shareholder, D.C.C. Equities, had its interest diluted to about 15% by the Cassiar transaction.

While it's rumored Ned Goodman's D.C.C. Equities is looking to increase its position, Rea Gold appears to be more interested in developing an ongoing relationship with Cassiar Mining.

"We have common interests with Cassiar," said Reaugh. "I think its a great relationship that could be expanded."

Agnico to swallow a poison pill

Agnico-Eagle Mines (TSE) will be asking shareholders at its annual meeting next month to swallow a poison pill designed to thwart unsolicited takeover bids.

Formally known as a shareholder rights plan, the pill is designed to trigger excessive dilution of Agnico's stock in the event that a hostile company amasses more than 20% of Agnico's shares. The dilution is created by shareholders, other than the buyer, exercising their right to buy Agnico shares at a significant discount to market prices.

The company is adopting the rights plan "in the interest of all shareholders to ensure fair treatment in the event of unsolicited

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June 5, 1989

REGULAR DEPARTMENTS

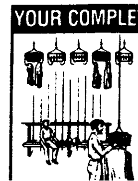
Freeway Resources has changed its name to GRD Industries (GID: VSE) on a 1-new-for-2-old share basis.

MEETINGS

June 6, 10 a.m. **Novagold** — Halifax, N.S.
June 6, 10:30 a.m. **Cons Thompson-Lundmark** — annual, special, Engineers' Club, Toronto.
June 6, 11:15 a.m. **Que. Cobalt** — special, Engineers' Club, Toronto.
June 6, 10 a.m. **Lachib Dev.** — annual, special, 900, 10 King St. E., Toronto.
June 6, 9:30 a.m. **Coeur d'Alene Mines** — Coeur d'Alene Resort & Convention Center, Coeur d'Alene, Idaho.
June 6, 3:30 p.m. **Omega Hydrocarbons** — Calgary.
June 7, 10 a.m. **Black Hawk Mg** — 10th floor, 6 Adelaide St. E., Toronto.
June 7, 11 a.m. **Manridge** — Toronto.
June 7, 10 a.m. **Segepet** — Toronto.
June 8, 3 p.m. **Royal Oak** — Calgary.
June 8, 10 a.m. **Davidson Tisdale** — Hilton International Hotel, Toronto.
June 9, 2 p.m. **Bema Gold** — Vancouver.
June 9, **Atlanta Gold** — Engineers' Club, Vancouver.
June 9, 11 a.m. **New Quebec Raglan** — Sheraton Centre Hotel, Toronto.
June 9, 2 p.m. **Frobisher** — 10th floor, 595 Howe St., Vancouver.
June 12, 2 p.m. **Westmin** — Four Season Hotel, Vancouver.
June 12, 10 a.m. **Nova-Cogesco** — Montreal.

COMING EVENTS

June 8-10 **McGill University, Dept. of Mining and Metallurgical Engineering** — Gold & Platinum Extraction Technology. Montreal, Quebec. Contact: (514) 498-4383.
June 11-14 **American Institute of Mining, Metallurgical and Petroleum Engineers/American Society of Civil Engineers** — Rapid Excavation and Tunneling Conference, Westin Bonaventure Hotel, Los Angeles, California. Contact: Meetings Dept. (303) 973-9550.
June 12-14 **Carbocol** — 4th Pacific Rim Coal Conference, Colombia, South America. Contact: Dr A. Polofsky (201) 254-6930.



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New CANDU 3 reactor holds key to the nuclear industry's future

The nuclear energy industry may be down in the dumps but in Canada the industry is looking forward to a resurgent market in the mid-1990s.

In particular, Atomic Energy of Canada Ltd. (AECL) has designed a smaller-sized CANDU reactor (CANDU 3) it believes will be filling the needs of countries with uncertain load growth, small grid sizes and/or limited financial resources.

The new modular reactor, with output of about 450 megawatts, is designed to compete (over the life of the facility) with similarly sized coal-burning plants. A construction period of less than three years is projected for the reactor.

Ronald Veilleux, AECL vice-president corporate relations, told The Northern Miner the cost of building a comparative coal plant is estimated to be about half of the cost of a new CANDU 3 reactor. A cost saving would be realized, he said, because the reactor would take less time to build than the coal plant.

In Canada, about 15% of the country's electricity is produced by nuclear power. In Ontario, nuclear power supplies about half of the province's power. When Ontario's Darlington plant comes on stream in 1992, nuclear power will account for about 20% of the nation's electricity.

The AECL and other organizations, such as the Canadian Nuclear Association (CNA) which recently hosted its 29th annual conference in Ottawa, give a number of reasons why they think the industry will soon be enjoying better times.

Concern continues to grow, they point out, over the effect fossil-burning fuels are having on the environment.

Ontario Hydro estimates total unit energy costs of its nuclear stations are 15-40% lower than for comparable coal-burning facilities.

While long-term supply contracts provide uranium producers with some security, the companies cannot be happy with current spot prices, which NUKEM of Germany was recently reporting in the \$9.90-\$10.35(US) per lb range. Spot prices of U_3O_8 were in the \$43 range during the late 1970s.

Canada is the world's largest producer of uranium, turning out about one-third of the current global output. About two-thirds of Canada's uranium is mined in Saskatchewan and the remainder in Ontario.

This year marks the 200th anniversary of the discovery of uranium (in northern Germany) and the 50th year of the discovery of nuclear fission.

An April, 1989, survey undertaken by Decima Research for the CNA indicated 67% of Canadians believe nuclear energy is a "good" or "realistic" choice for generating electricity in Canada (compared with 78% in November, 1988, and 68% in the autumn of 1987).

In response to a question on favorability toward the use of nuclear energy, 14% were "strongly"

Minnova resumes drilling

VANCOUVER — As part of a regional effort to secure additional feed for its 70%-owned Samatosum mill, **Minnova Inc.** (TSE) has resumed drilling on the Chu Chua volcanogenic massive sulphide deposit north of Kamloops, B.C.

The company is earning a 50% interest from **International Vestor Resources** (VSE), **Quinterra Resources** (TSE) and **Pacific Cassiar Ltd.** (TSE), which own the property equally.

The Chu Chua property contains a drill-indicated reserve of about 2.8 million tons grading 2% copper, with zinc, silver, gold and cobalt values. The deposit is still open to extension.

Minnova's drilling in the top 250 ft of the deposit last year revealed a high grade zone calculated as 785,000 tons of 3.1% copper or 460,000 tons of 4.07% copper, all of which can be mined by open pit methods.

This reserve is reported to be open in both directions on strike, and it will be the extensions that will be tested by the current program. An open pit mineable reserve and open pit design will be prepared upon completion of the drilling.

Metallurgical testing is also in progress to assess the deposit's milling characteristics.

Chu Chua is located within trucking distance of the 500-ton-per-day polymetallic Samatosum mine operated by Minnova which is now in its start-up phase. **Rea Gold** (TSE) holds a 30% interest and a 5% net smelter royalty. Reserves are reported as 661,000 tons grading 32.08 oz silver, 1.2% copper, 3.5% zinc, 1.7% lead and 0.052 oz gold per ton, sufficient for about a 5-year mine life.

Prime updates SNIP

VANCOUVER — A number of capital projects were completed on the SNIP gold project 65 miles northwest of Stewart, B.C., in 1988-89 by operator **Cominco Ltd.** (TSE), shareholders of **Prime Resources** (VSE) were told recently.

Cominco can earn a 60% interest in the property by spending twice the amount that Prime spends and by delivering a favorable feasibility study. So far, Prime has spent \$12.7 million on the property. Cominco has spent or is committed to spend \$17.4 million.

Among the projects completed are expansion and upgrading of the Bronson airstrip, construction of surface accommodations, diversion of Sky Creek, and completion of the Bronson Creek berm. In addition mine development continued preparation for driving the 130-m haulage tunnel to the mill site on Bronson Creek.

Cominco is continuing with production ramp development and detailed underground drilling for mine planning purposes. A 40,000-ft drill program is under way to test hangingwall stability, ground support requirements, and general mining conditions. This program alone will cost about \$3 million.

Ramp development and stope delineation drilling should be completed by August and an evaluation of results by September. The company expects a full feasibility study and production decision from Cominco by October.

Permitting is in progress and this should be completed by October as well. After a production decision is

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The purchase of BIG expands LAC's exploration plays
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Uranium
Rio Algom is looking at buying Uranium Resources
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The Northern Miner

Founded 1915

Vol. 75 No. 35 OUR 75TH YEAR CANADA'S MINERAL RESOURCES NEWSPAPER November 6, 1989

Samatosum mine opens producing silver, zinc plus copper, lead, gold

82M 244

by Vivian Danielson

BARRIERE, B.C. – The sun shone only briefly during the official opening of the Samatosum mine 40 km from this small community, but it was enough to cap a red letter day for **Minnova Inc.** (TSE) and junior partner **Rea Gold** (TSE).

Keith Hendrick, chairman of Minnova and president of Noranda Minerals, snipped the ceremonial red ribbon to mark the opening of the small, high grade silver and base metal mine. But the moment was shared by Minnova President Ian Bayer, Rea Gold President Larry Reaugh, and by visiting dignitaries and company officials.

Bayer told the crowd gathered at the mine site that the successful start-up of Samatosum was the result of an initiative to apply Minnova's "eastern" massive sulphide expertise to the Cordillera. The mine is the first to be developed in Western Canada by the Toronto-based company which also has an extensive land package in the surrounding area.

"We expect to be here a long time," he said. Bayer is also president of **Kerr Addison Mines** (TSE), which acquired control of Minnova (then known as Corporation Falconbridge Copper) in 1986. Kerr Addison in turn is controlled by **Noranda Inc.** (TSE).

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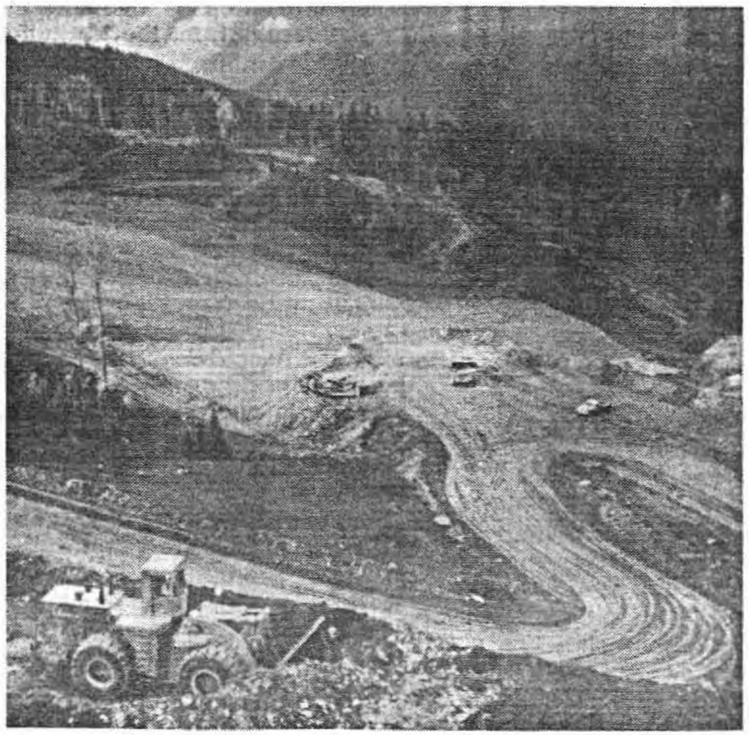

Photo by The Northern Miner

The open pit at Samatosum is located on the north slopes of Samatosum mountain at an elevation of about 1,400 m, 40 km from the town of Barriere in southern British Columbia.

Freewest results renew interest in Harker-Holloway

by Nicholas Tintor

Results from deep drilling by **Noranda Inc.** (TSE) on ground held in joint venture with **Freewest Resources** (ME) has sparked renewed interest in the Harker-Holloway area north of Kirkland Lake, Ont.

Drilling has led to the discovery of three mineralized zones, the most significant of which is known as the Lower zone. Striking for more than 1,300 ft, the Lower zone remains open to the east and at depth.

Some of the better results from the zone include 57.4 ft grading 0.166 oz gold, 53.1 ft grading 0.215 oz gold, 54.1 ft assaying 0.4 oz gold and a 14.8-ft section which assayed 0.32 oz gold per ton. Another 41.4-ft section on the **Teddy Bear Valley Mines** (COATS) property to the west assayed 0.271 oz.

The zone strikes across the Freewest-Teddy Bear claim boundary and is being tested from both

Samatosum into production

From Page 1

The $30.3 million mine, 70%-owned and operated by Minnova, was completed within budget and 20 days ahead of schedule. Construction began in early October of last year, production was 100% achieved in July, and the operation is generating a positive cash flow.

Rea Gold has a 30% interest plus a 5% net smelter return royalty. The company optioned the property in October of 1983 from prospector Al Hilton on the strength of a promising gold-bearing massive sulphide showing.

David Watkins and Alex Davidson of Minnova are credited with having secured a deal with Rea Gold the following month. Subsequent exploration work by Minnova led to the discovery of what is now the Samatosum deposit in July of 1986.

This deposit will be mined by open pit methods for the first two-and-half years, followed by a transitional year to underground, and ending with one-and-half years of underground mining (most likely trackless cut and fill).

Diluted mine reserves were reported (July, 1989) as 766,682 tonnes grading 833 g (24.3 oz) silver, 1.6 g (0.05 oz) gold, 1.1% copper, 1.4% lead and 3% zinc.

Since the beginning of July, the mill has operated at its nominal capacity of 422.5 tonnes per day. More than one million ounces of silver — the prime economic metal — were shipped in 5,000 tonnes of concentrates by the end of September. Other payable metals, in order of importance, are zinc, gold, copper, lead and antimony.

The mine produces three products. Lead concentrates are trucked in bulk to Asarco in East Helena, Mont. Zinc concentrates are trucked to Cominco in Trail, B.C., and copper-silver concentrates are bagged and shipped to Belgium and Japan.

Minnova's 1990 production forecast is for 8,000 tonnes of copper concentrate, 9,000 tonnes of zinc concentrate and 5,500 tonnes of lead concentrate. These concentrates will contain 6.25 million oz silver and 10,500 oz gold. So far, mining and milling costs are reported to be in line with Minnova's expectations.

The Samatosum ore zone consists of both a quartz vein and massive component, rather than a typical massive sulphide deposit. Both ore types contain tetrahedrite, sphalerite, galena, chalcopyrite, and electrum.

The zone undulates, pinches and swells and is structurally altered, but Minnova said it has proved to be remarkably continuous. Downdip the deposit straightens out into a flat, plunging tabular orebody averaging 6x500x80 m.

"This orebody is a little more folded and a little more faulted than we thought initially," said Bob Friesen, chief geologist. "But the grade and continuity was established with the drilling and it's holding up very well."

Minnova awarded a contract for open pit mining to Ledcor Industries early this year. The Vancouver-based contractor built 1.5 km of haulroad connecting the pit and the plant, hauled the first overburden by the end of March, and the first ore in early May.

About four million tonnes of waste and 70,000 tonnes of ore have been removed from the pit to October 18. The over-all strip ratio is expected to average 18.4:1 tonnes waste to tonnes ore over the life of the pit.

Mine superintendent Brad Thiele noted that all mining schedules have been met and the company is pleased with the performance of Ledcor. Mining currently involves 45 people, working five days per week on two 10-hour shifts per day.

The decision to use contract miners was primarily based on the relatively short mine life at Samatosum. No capital outlays were required to buy equipment, Thiele pointed out, and the company has the advantage of skilled operators and flexible use of equipment. Ledcor is paid on a unit basis which varies depending on whether the contractor is working in waste or in ore.

"We pay a higher unit price when Ledcor is working in the ore zone," said mine manager John Purkis. "This is where our engineers and geologists take control. We pay a premium to achieve that control, but in our opinion it's worth it."

Ore mining — which involves handling low volumes of very high grade material — is carried out on shallow 2.5 m bench heights with all activities under the direct supervision of a Minnova mine technician.

"This operation does differ from most open pit mines where you typically have large amounts of lower grade disseminated ore," said Bob Friesen. "Ours is a high grade and predominantly vein-hosted orebody. So even though it's open pit we have to use underground techniques to identify the ore."

Typically, this involves tight-spaced drilling, assaying, plus constant supervision during mining for grade control. Areas with high lead (over 5%) are set aside, as metallurgical problems develop in the mill when the lead to copper ratio exceeds 3:1. Purkis said blending from stockpiles is necessary to reduce grade variability and provide a smooth mill feed.

Waste material at Samatosum is predominantly non-acid generating, and this material is used to buffer the maximum 10% of waste that has acid-generating potential.

The milling process at Samatosum is, as might be expected, a rather complex process. Ore is fed to the crushing circuit and crushed to 3-inch size. This material is then screened and product oversize is carried to a shorthead crusher which reduces the ore size to ½ inch.

Ore is drawn from the fine ore bin by two variable speed conveyors to feed a 8x10-ft ball mill which grinds the ore down to a separation size of 60% minus 200 mesh.

This slurry reports to the copper-silver, lead roughers at 38% solids and sulphur dioxide is added to depress the zinc. Collectors and frothers are added to float the copper-silver/lead concentrate which goes through one cleaning stage.

The copper-silver/lead float from the cleaner stage goes to reverse flotation where the lead is depressed and the copper-silver is removed by flotation. The zinc is activated by copper sulphate and cleaned in a separate zinc flotation circuit.

The concentrates are fed to three thickeners as copper-silver concentrate, lead concentrate and zinc concentrate. As they thicken, they are transferred to stock tanks and then individually fed to a filter press for moisture reduction to 7% level.

October mill head grades (to Oct 23) averaged 1.01% copper, 2.66% lead, 5.19% zinc and 808 g silver per tonne. Minnova said head grades, metallurgical results and operating costs are now in line with expectations.

Inco, Noranda officers cash in shareholdings

A group of four executives at **Inco Ltd.** (TSE) and **Noranda Inc.** (TSE) made substantial amounts recently by unloading some of their holdings in the Toronto-based resource companies.

According to the Ontario Securities Commissions insider trading report, Brian Davison, Inco's director of European production sold 3,866 shares at $27.75(US) each to hold 179. Director John Gordon sold 200 shares at $43.47 each to hold none, while Aurelio Petracchi, vice-president of operations at Inco Gold, sold 387 shares at $40 per share to retain 268.

Over at Noranda, the company's former copper group President Alex Balogh sold 14,000 shares at $27 each to hold 59,375. Balogh was recently named president of Noranda's 50%-owned affiliate **Falconbridge Ltd.** (TSE)

Noranda President David Kerr also purchased 42,550 shares recently at $27.03 to hold 42,550.

Other mining insiders who were active in the stock market recently include David Elgee, secretary at **Cassiar Mining** (TSE), who profited by purchasing 4,000 shares at $1.05 and then selling the shares a week later for $6 each to hold none.

Glencairn Explorations (ASE) Vice-president Ian McDonald purchased 33,710 shares at 67-90¢. He also sold an additional 48,000 shares at 70-80¢ to hold 67,285.

Glencairn secretary-treasurer Laurence Stephenson purchased 2,000 shares at 90¢ each and sold 7,500 at 78-88¢ to hold 116,500.

Jascan Resources (TSE) President William Felderhof bought 15,000 shares at 35-36¢ to hold 559,323.

Noranda Minerals also exercised an option to purchase 130,700 shares of **Societe Miniere Louvem** (TSE) at $5.37-7.25 to hold 1,927,700.

Breakwater Resources (TSE) President Brian Pewsey purchased 3,000 shares at $2.10 to hold 12,000.

Cheni Gold Mines (TSE) director Edwin Phillips purchased 5,000 shares at $2.65 per share to hold 49,000.

Greenstone encouraged by drift

An underground exploration drift on **Greenstone Resources'** (TSE) El Recio property in Costa Rica has yielded encouraging results in one of several veins being explored by the Toronto-based junior company.

The 2,000-acre property, in the Abangares gold district of Costa Rica, vein structures within Tertiary age volcanic rocks.

Underground sampling on the property's south Recio vein returned 0.24 oz gold per ton across 4 ft for a drift length of 312 ft, of which 144 ft graded 0.35 oz gold per ton. Surface assays reported previously by Greenstone include

Ego plans more drilling on N.W.T. lead-zinc property

Final results have been reported from a 12,000-ft drilling program on **Ego Resources'** (TSE) lead-zinc-silver property, 15 km north of MacLeod Bay on Great Slave Lake, N.W.T.

A phase-two drill program is scheduled to begin next month, the company said.

The recently completed program tested a previously known occurrence of lead-zinc-silver mineralization known as the BB Lake deposit. The prospect was explored in the late 1940s and early 1950s by another company.

Some of the better results reported from Ego's recent phase of drilling are as follows:

Hole	Width (m)	Zinc (%)	Lead (%)	Silver (g/t)
1	14.0	7.4	3.5	118.9
2	1.5	7.8	0.05	23.1
3	1.4	10.0	0.12	30.3
6	3.4	9.0	0.47	180.9
7	4.4	7.4	0.06	80.6
8	16.0	16.6	0.85	169.3
11	12.1	5.9	0.04	18.6
13	15.0	7.0	0.01	56.4
14	11.2	7.5	0.03	12.5

Geologically, the BB Lake deposit lies within the nose of a fold that plunges northeast at an angle of about 45°. The mineralization occurs as a series of sulphide lenses hosted by a cherty tuff unit at the contact between felsic volcanics and quartz-mica schists.

Ego has spent $450,000 on the property to date, and will earn a 100% interest in the claims by spending a further $1.05 million prior to April, 1992. Another junior company, **Asquith Resources** (COATS), can earn a 25% interest in the property by providing $375,000 for exploration work. Funding for Asquith's share of the first phase of exploration was provided by Nanisivik Mines, a wholly owned subsidiary of **Mineral Resources International** (TSE).

A phase-two program, comprising 20,000 ft of diamond drilling using two machines, is scheduled to get under way by mid-November, according to Ego.

Nic-Nik Resources has changed its name to Transtel Communications Corp. (TCU:VSE) on a share-for-share basis. Transfer agent is Royal Trust Company.

MEETINGS

Nov 6, 10 a.m. **Int'l AMCO** — special, Royal York Hotel, Toronto.
Nov 8, 10 a.m. **Citadel Gold** — special, Ramada Primrose Hotel, Toronto.
Nov 10, 10 a.m. **ERG Res.** — annual, special, Sheraton Centre, Montreal.
Nov 10, 9 a.m. **Inca Res.** — extraordinary, Royal York Hotel, Toronto.
Nov 10, 9:15 a.m. **United Gold** — special, Royal York Hotel, Toronto.
Nov 10, 9:30 a.m. **Neptune Res.** — special, Royal York Hotel, Toronto.
Nov 10, 10 a.m. **ABM Gold** — special, Royal York Hotel, Toronto.

COMING EVENTS

Nov 7 **University of Toronto, Dept of Geology** — Seminar "New Developments in Mine Operating Systems" by Hermann Derbuch, Director of Mining, Noranda Minerals. 4 p.m. Room 2093, 22 Russell St., Toronto. Contact: Dominic Channer (416) 978-3022 Fax: (416) 978-3938.

Nov 7 **McMaster University** — Geology Seminar "Rhenium/Osmium Systematics of the Creighton Mine, Sudbury" by Dr. Jean Richardson, Dept of Geology, 4 p.m. Room A.B.B.-102, Hamilton, Ont.

Nov 7-8 **Canada Centre for Mineral and Energy Technology (CANMET)/Quebec Mining Assoc (QMA)/Can Centre for Automation & Robotics in Mining (CCARM)** — Symposium "Computer Technology and Mining Applications", CEGEP de l'Abitibi-Temiscamingue, Rouyn-Noranda. Contact: Dorien Caron (418) 643-3536 Fax: (418) 646-7759.

Nov 8-10 **American Mining Congress/National Coal Association** — National Industry Communications Workshop, Hotel Washington, Washington, D.C. Contact: Carol Sheppard, (202) 861-2839.

Nov 9 **Canada Centre for Mineral and Energy Technology (CANMET)/Quebec Mining Assoc (QMA)/Can Centre for Automation and Robotics in Mining (CCARM)** — Symposium "Narrow Vein Deposits and Mining Equip

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November 6, 1989

Section A

Section B

REGULAR DEPARTMENTS

Correction

Contrary to what we reported (N.M., Oct 30/89), there is no longer any connection between Stan West Mining of Arizona and Toronto-based Stan North Mining.

Rio Algom (TSE) has declared a semi-annual dividend of 52.5¢, an increase of 10¢, on its common shares, payable Dec 4 to shareholders of record Nov 10.

George Cross News Letter

NO.205(1989)
OCTOBER 25, 1989

MINNOVA INC.(ME-T)
REA GOLD CORPORATION(REO-T,V;REOGF-Nasdaq)

OFFICIAL OPENING OF SAMATOSUM SILVER MINE - KAMLOOPS,B.C.
FIRST 1,000,000 OZ.SILVER PRODUCED SINCE PRODUCTION START

Official opening of the 450 tonne capacity concentrating plant at the Samatosum silver zinc copper mine is scheduled for Oct.25,1989. The ceremonies are at the mine site, at 4,500 feet elevation on Adams Plateau, 28 miles NE of Kamloops, B.C., 250 miles north of Vancouver, B.C. Minnova Inc., owner of a 70% working interest, is operator with Rea Gold holding a 5% net smelter return royalty and a 30% working interest. The plant and mine were brought into production in June 1989 at a capital cost estimated at $32,200,000.

Silver production to date has exceeded 1,000,000 ounces silver. Mining in the pit has averaged 410 tonnes per day with some blending now underway. Currently the mine has two people in the pit supervising blending and assisting in grade control. To take advantage of the good fall weather, the stripping has been accelerated beyond the planned rate to beat the winter weather.

Fine tuning of the concentrating plant is continuing. The plant is producing three concentrates: copper/silver; lead/silver/gold and zinc/silver. Recoveries in the past few months of tune up have been close to projections. Silver recovery started about 96% and is currently running about 94% on some lower grade ores. Copper recovery started off about 76.5% and currently is about 85% and improving. Zinc recovery started at 76.8% and is now about 62% with the lower ore grade. Gold recovery has been stable at about 88%.

At feasibility study reserves were calculated at 661,000 tonnes grading 32.08 oz.silver/t, 0.052 oz.gold/t, 3.5% zinc, 1.7% lead, 1.2% copper.

82M 244

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JUNE 27, 1989

…NADIAN INVESTMENTS

REA GOLD CORPORATION (REO-V,T:REOGF-Nasdaq)

FIRST CONCENTRATES SHIPPED FROM SAMATOSUM MINE - John W. Fisher, P.Eng., director and vice-president, milling, of Rea Gold Corporation reports the Samatosum high grade silver and base metal mill 28 miles northeast of Kamloops, B.C., is making satisfactory progress through its initial commissioning and tune-up stage. Start up in the latter part of May was about one month ahead of schedule. Initial shipments of lead and zinc concentrates were made in the first half of June. More than 180 tonnes (200 tons) of copper/silver concentrates have yet to be shipped. Arrangements have been completed for the sale of all concentrates. Rea Gold has a 5% net smelter royalty and a 30% working interest in the joint venture with Minnova Inc.

The open-pit mine is developed and able to supply sufficient ore to maintain mill throughput at its rated capacity of 450 tonnes (500 tons) per day. During the first four weeks the mill has operated at 50% to 70% of capacity as tune up proceeds and efficiency is brought up to the levels indicated by testwork. At prevailing metal prices the project is expected to generate in excess of $40,000,000 revenues from sales of copper/silver; lead/silver/gold; and zinc concentrate during the first full year of production.

82M244

 82M244

Higher base metal prices help Minnova hike 9-month earnings

Higher base metal prices helped **Minnova Inc.** (TSE) boost net income for the first nine months of 1989. A member of the Noranda group of companies, Minnova recorded net income of $4.4 million (31¢ per share) for the first three quarters. Last year for the same period, the company reported net income of $1.3 million (9¢ per share).

Minnova's metal sales and operating profits increased substantially this year following summer production start-ups at the Ansil copper mine near Rouyn-Noranda, Que., and the Samatosum silver-base metal mine (70% interest) about 60 miles north of Kamloops, B.C. In northwestern Ontario near Schreiber, the company's Winston Lake zinc mine has been in production since the first half of 1988.

The Ansil mine produced at 80% capacity during the third quarter, and the Samatosum project at 95%, the company reports.

Gold production for the Lac Shortt and Opemiska mining operations in northwestern Quebec totalled 50,000 oz to the end of September, down 12,000 oz for the same period in 1988. The company attributes the gold output decline to lower average head grades.

During the 9-month period, capital expenditures, principally on construction and development at Ansil, Samatosum and Lac Shortt (underground development), amounted to $36.9 million.

In other news, Minnova's immediate parent, **Kerr Addison Mines** (TSE), reported net income for the first nine months of 1989 of $16.6 million (95¢ per share). Last year for the same period, the company announced net income of $7.1 million (41¢ per share).

Kerr, playing the role of a holding company, reported cash and short-term investments totalling $99.5 million at Sept 30.

Minnova is owned 50.5% by Kerr, which in turn is owned 50.2% by Noranda Inc.

Callahan losses total $3.3 million

VANCOUVER — Arizona-based **Callahan Mining** (NYSE) is reporting a loss of $3.3 million(US) or 43¢ per share for the first nine months of 1989.

The company reported a loss of $1.89 million or 25¢ per share for the first three quarters of 1988. Revenues were $22 million for the first nine months of 1989, versus $25.3 million a year ago.

The loss for the third quarter was $763,000 on revenues of $7.9 million, compared with a loss of $625,000 on revenues of $8.56 million last year.

Chairman Charles Snead said the extension of losses into the third quarter resulted from lower revenues from the company's Idaho silver interests, negative results from the Ropes gold mine in Michigan, and higher exploration outlays.

Hope Brook loss

The Hope Brook gold mine in Newfoundland continues to operate at a loss, owner **Hope Brook Gold** (TSE) says. For the third quarter ended Sept 30, Hope Brook lost $3.9 million or 13¢ per share. Although gold output increased to 20,059 oz for the period, the improved production rate is still below design expectations. Also, earnings were affected by lower gold prices, which are 20% below prices realized in the same period in 1988.

Development of the underground mine was completed during the quarter, and all mill feed is being provided from underground stopes. Hope Brook initially pro-

Cameco project closel

Aur Resources's big base metals find in Quebec is not the only project being watched by investors. In Saskatchewan, about 35 miles west of Flin Flon, **Cameco**, a government mining agency and **Trimin Resources** (TSE) are building reserves at their Hanson Lake project.

Since beginning exploration in 1988, 7.7 million tons grading 1.1% copper, 6.5% zinc, 1.0 oz silver and 0.02 oz gold per ton have been outlined in lens two. Two other smaller lenses higher in the volcanic stratigraphy have also been partially drilled off.

Lens one hosts 440,000 tons grading 2.5% zinc and 1.7% copper whereas lens three has 44,000 tons grading 8.1% zinc and 1.6% copper. Neither of these reserves is included in the 7.7-million-ton reserve figure published by the partners.

What has excited investors and the companies is the excellent continuity between drill holes in lens two. Although the drill spacing is 328 ft wide, the program to date has been able to define a sizeable resource to a depth of 2,953 ft. The lens is defined along strike for 1,641 ft.

For Trimin, the Hanson Lake find has been a godsend. The company began life as most Vancouver juniors begin life — with roots gold prospect. Th known as the Indian proje joint venture with Esso M the minerals arm of Canad est oil company, Imperial

In June, 1988, Esso Trimin to participate in a b als play in Saskatchew $700,000, the company co a 24.5% interest. That proj Hanson Lake which ha blossomed into a significa copper discovery displayi mine-making possibilities.

After Esso decided to se Canadian mineral assets ea year, Trimin and Cameco increase their interests in th to 67.1% and 32.9% resp Trimin's share of the acq cost came from a $1.2-mil benture placed privately b Witter Reynolds, a Toront ment firm.

But the real acid test for came in early September, group of mining analysts to site and examined sections core. Hanson Lake got a thu and Trimin's stock took $1.90 to $3.25.

During a tour in Septe several investment houses don and Zurich, the project a positive response. "We w received in Europe," Randy

The Northern Miner
Founded 1915
Vol. 76 No. 2 CANADA'S MINERAL RESOURCES NEWSPAPER March 19, 1990

Easing of regulations in Latin America improves climate for Canadian investment

by Geoff Pearce

New realities in Latin America, including the recent election of civilian governments in Chile and Brazil, could help create new opportunities for Canadian mining companies.

"Latin America is an area many major mining companies are now seriously examining for development opportunities," said David Hutton, vice-president of exploration for **Minera Rayrock** (TSE), a Toronto-based mining firm that's developing a copper deposit in Chile and gold mines in Costa Rica.

A lack of capital in many South American countries, however, remains a major obstacle to the development of the region's mineral resources, Hutton told delegates at a special session devoted to Latin America at this year's annual Prospectors and Developers Association Convention.

As governments in countries such as Chile and Brazil ease regulations governing foreign investment and encourage more mining development, Canadian companies could come up winners, he told delegates.

"Under the heat and pressure of new economic realities, several South American countries have been metamorphosed, and new opportunities for mining companies exist because the political climate is changing," he said.

He noted military dictatorships in Brazil and Chile, for instance, have been replaced recently by democratically elected governments, and there is a new attitude to stimulate the mining sector and encour-

See SOUTH, Page 23

International Platinum hits high-grade zone on Kirkland Lake bet

by Virginia Heffernan

A drill hole on the Goodfish property near Kirkland Lake, Ont., has intersected 90 ft. averaging 0.26 oz. gold per ton in an environment commonly associated with Kirkland Lake's gold producers.

The true width of the intersection has not been calculated and high-grade values were not cut.

By drilling a minimum of 10,000 ft. over 18 months, **International Platinum** (TSE) is earning a 51% interest in the 16 patented claims from owner **Glencairn Explorations** (ASE).

Collared on the previously undrilled A zone, hole 90-4 intersected extensive quartz veining within a shear zone. The 90-ft. intersection included one 2-ft. section grading a remarkable 7.2 oz.

Including hole 90-4, a total of seven holes covering three mineralized zones (A, B and C) have been drilled by International Platinum to date. Although many of the these holes returned high grades, widths were too small to be considered encouraging.

camp, mineralization at the Goodfish property is associated with

See GOODFISH, Page 2

Samatosum doubles gold, silver output from startup levels

by John Kilburn 82M244

VANCOUVER — Gold and silver production at the Samatosum mine, 28 miles northeast of Kamloops, B.C., more than doubled in the January-February period, compared with the average monthly production rate since the mine's startup in mid-1989.

The mine is operated by 70% owner **Minnova** (TSE), while the balance is held by **Rea Gold** (TSE). Rea Gold also has a 5% net smelter return royalty.

Average monthly silver production jumped to more than 630,000 oz. in the first two months of 1990 from 290,212 oz. in 1989. Gold production also jumped from a monthly average of 488 oz. to 1,211

See SAMATOSUM, Page 2

Samatosum

From Page 1

oz. in January and in February.

Base metal production also increased, although less dramatically. Zinc production jumped to 980,262 lb. each month for the first months of 1990 from 807,290 lb. in the six months of initial production in 1989. Copper production increased from 169,688 lb. to 331,396 lb., lead from 466,878 lb. to 691,060 lb. and antimony increased from 50,788 lb. to an average of 96,638 lb. per month.

Rea Gold noted that increased metal production was the result of mining in the higher-grade portions of the pit as well as through increases in milling recoveries.

Pouring gold at Nerco's Con mine. Photo by The Northern Miner

Nerco fashions Con turnaround with US$95-million investment

by Vivian Danielson

LOWKNIFE, N.W.T. — A efined operating strategy by more than US$49.4 mil- capital improvements has l Nerco Minerals, a unit of **Inc.** (NYSE), to achieve a und in operations at its Con ine, on the outskirts of this n community.

Con mine — purchased from co in late 1986 for US$46 — is Nerco Minerals' first round mine and its first Cana- eration. The oldest and per- nost famous of northern Con has turned out more ree million ounces of gold 51 years of continuous ion.

deposit can be reached by oduction shafts, one of which is more than a mile deep, and it has more than 50 miles of underground workings extending under the city of Yellowknife and under Great Slave Lake's Yellowknife Bay.

Thomas Albanese, chief operating officer for Nerco Minerals, candidly admits the northern mining venture has been a greater challenge than anticipated. But he also said the mine and adjacent 16,700-acre land package was found to have more potential for growth than expected, justifying the company's commitment to upgrade and modernize the aging mine which was in need of capital improvements.

Nerco spent US$13.7 million on capital projects in 1987 and a further US$35.7 million in 1988 as part of a multi-front effort to increase production, improve efficiencies, and lower unit costs. While the company wasn't able to meet its production and cost-reduction goals in 1988, operating results in 1989 appear to confirm the view

See NECRO, Page 2

Results confirm high-grade gold at Eskay Creek 104B008

VANCOUVER — The latest uncut assay results released by operator **Calpine Resources** (VSE) are continuing to confirm the high-grade nature of the Eskay Creek gold deposit, north of Stewart, B.C.

Calpine owns 50% of the project while **Stikine Resources** (TSE) holds the remainder. A total of six drill rigs are continuing to test the 21B deposit where Roscoe Postle Associates recently calculated a probable and possible geological reserve of 1.5 million tons grading an impressive 1.43 oz. gold per ton, 40.26 oz. silver, 2.1% lead and 5.08% zinc. A cutoff grade of 0.25 oz. gold was used.

While several stepout drill holes testing the area beyond this reserve returned no significant results, one of the better stepout holes returned 137.7 ft. grading 0.447 oz. gold and 24.08 oz. silver.

Infill drilling is presently confined to the 21B deposit within the bounds of the reserve. The latest results, excluding base metal results which are still pending, are:

Hole	Length ft.	Gold oz./ton	Silver oz./ton
90-250	32.8	1.466	28.96
90-286	23.0	0.347	25.95
90-287	29.5	1.248	33.87
incl.	13.1	2.433	69.10
90-288	13.1	0.321	0.34
90-289	32.8	5.09	181.96
90-296	13.1	0.877	30.22
90-297	26.2	0.821	10.66
90-308	19.7	0.394	10.34
90-309	19.7	0.697	17.96
90-310	19.7	1.413	55.59
90-311	6.6	0.263	1.63
90-312	23.0	0.524	10.90
incl.	6.6	1.360	20.12
	13.1	0.322	4.64
90-313	9.8	0.291	8.25
	13.1	1.129	62.10

Delegates enjoy PDAC convention events

by Peter Kennedy

An expected shakeout in the exploration business appeared to have little effect on the level of interest in this year's Prospectors and Developers Association of Canada Convention in Toronto.

More than 3,000 visitors, including delegates and their guests, converged on the Royal York Hotel March 11-14 to share industry gossip and hear about discoveries that have made headlines recently.

As usual, the 900 rooms set aside for the event were booked. Many visitors were prepared to pay $550 a night for the privilege of entertaining their colleagues in one of the Royal York's large suites.

Aware that they can no longer rely on government-backed incentives — at least outside Quebec — convention organizers concentrated on preparing delegates for "the new realities" that could drive some of the membership out of the exploration business entirely.

At a panel discussion involving mining developers and environmental activists, World Wildlife Fund Canada President Monte Hummel said he wanted 12% of Canada's land mass set aside for conservation.

Minutes later in a luncheon speech titled "The Globalization of the Mining and Exploration Business," Dr. Klaus Zeitler, president of **Metall Mining** (TSE), told the audience that Canadians should be active in underdeveloped countries where the geology is attractive.

"There is no question that we will see a significant diversion of exploration funds to such countries in the coming years," he said. CMP Funds Management President Jean-Guy Masse was also on hand to tell analysts and industry executives that without the recently cancelled Canadian Exploration Incentive Program, mineral expenditures should drop to about $425 million next year, a level not seen since 1979.

"If this trend is not corrected, the mining industry will certainly decline to a fraction of its current size, probably by the turn of the century," said Masse.

But if the overall outlook appears to be less than comforting, there was plenty of evidence that given the money, Canadian exploration teams can beat the bushes and come up with new mineral deposits.

As usual, the companies with significant discoveries received most of the attention at a convention that remains the premier social event on the Canadian mining calendar. Visitors stood toe to toe in an effort to examine drill core at **Prime Resources'** (VSE) booth where samples from the Eskay Creek gold find in British Columbia were on display.

Geologists manning the **Aur Resources** (TSE) and **Corona** (TSE) display were also busy answering questions about the Louvicourt Twp. massive sulphide discovery and Mings Bight gold project in Newfoundland.

The only notable absentees this year appeared to be longtime PDAC supporter Viola MacMillan due to health reasons and flamboyant promoter Murray Pezim who was rumored to be lying low and was unreachable by phone at his home in Vancouver. Nevertheless, a new biography of "the Pez" titled "Tales of a Promoter" was on sale at the convention for $20 a copy.

In Pezim's absence, Newfoundland Mines Minister Rex Gibbons gave the awards night audience a lesson in what he called "good old-fashioned promoting," as he touted the potential of his province while presenting Aur President Jim Gill and Vice-President Howard Stock-

See PDAC, Page 23

George Cross

Reliable

NO.90(1990)
MAY 9, 1990

REA GOLD CORPORATION (REO-T; REOGF-NASDAQ)

YEAR ENDED DECEMBER 31	1989
Total Revenues	$4,904,967
Income before Depr.,Amort.,Write-Downs	137,273
Depreciation & Amortization	851,964
Write-Downs	1,290,896
Net Loss	2,005,587
Loss Per Share	16¢

THREE MONTHS ENDED MARCH 30,1990	
Total Revenues	$4,968,330
Net Earnings	1,365,199
Earnings Per Share	10¢

John W. Fisher, P.Eng., vice president, milling, Rea Gold Corp., reports financial results at left take into account the start-up of the Samatosum mine near Kamloops, B.C. which began commercial production 1Jul89. There were no revenues from production in 1988. For the first quarter of 1989, there was a preproduction loss of $14,727. Net earnings from Rea's 30% working interest were $719,573 and the net smelter royalty earned $645,626 for the 1990 first quarter

Total metals production at the Samatosum mine for the three months ended 30Mar90 was 2,200,000 ounces of silver and 4,000 ounces of gold contained in the copper, zinc and lead concentrates. Operating costs were as budgeted at US$2.05 per ounce of silver or US$1.42 per ounce when allowing credits for gold and base metals. Together silver and gold account for 80% of net smelter revenues.

Mill throughput of 39,404 tonnes was 3.6% over plan. Feed grades to the mill for silver, gold and lead were above plan while copper and zinc were below plan. Payable metallurgical recoveries for all metals were above plan, except for zinc which was under by 7.8%

Revenues were higher than planned due to increased mill throughput, higher feed grades and improved recoveries which compensated for lower metal prices and a higher Canadian dollar. (SEE GCNL No.52, 14Mar90, P.1 FOR SAMATOSUM PRODUCTION REVIEW)

82M 244

Rea Gold makes bid to buy QPX

VANCOUVER — A formal offer will be mailed shortly to Canadian shareholders of **QPX Minerals** (TSE) providing more details of a recent offer by **Rea Gold** (TSE) to acquire all their QPX shares in exchange for common shares of Rea Gold.

Rea Gold recently advised QPX's board of its intention to make the offer on the basis of one Rea Gold share for every 3.4 shares of QPX tendered to it. The offer would also be made to **Placer Dome** (TSE) which currently owns about 27% of QPX.

QPX President Tim Ryan said the company will wait until it receives Rea Gold's bid circular before it comments on the offer, although it is keeping an open mind in the meantime.

"There are many issues at stake here besides the share exchange ratio," he said.

QPX Minerals' key asset is its 100% owned QR gold deposit about 45 miles from Quesnel, B.C. The company received an independent feasibility study last summer which recommended the QR deposit be placed into commercial production. The project has already moved through two of three stages of the provincial mine development review process.

The feasibility study was based on diluted minable reserves of 1.3 million tons grading 0.17 oz. gold per ton. At a targeted production rate of 825 tons per day, the mine is expected to produce about 44,000 oz. gold per year, or a total of 190,000 oz. gold over 4.3 years. Cash operating costs have been projected at US$304 per oz.

Minable reserves are contained within three separate but related zones. Initial production would be derived from open pit mining of the Main zone, with development of the underground West and Mid-West zones taking place during the later production years. Additional reserves classed as possible are expected to add to the mine's operating life.

Based on extensive metallurgical work, QPX expects recoveries exceeding 94% by using a carbon-in-pulp milling process. Capital costs are estimated at a modest $22 million, But it appears financing the project has been a stumbling block for QPX in these tough economic times.

"We don't expect we would have any trouble financing the project," said Larry Reaugh, president of Rea Gold.

Rea Gold has a 30% working interest and a 5% net smelter royalty in the profitable Samatosum mine operated by **Minnova** (TSE), north of Kamloops, B.C.

The operation began open pit production in 1989, and the mine operated smoothly throughout 1990. Rea Gold said almost 10% additional throughput to 511 tons per day was maintained for the year which helped offset lower-than-expected prices for gold and silver.

In 1990, more than 5 million oz. silver were produced into a total of 18,072 tons of base metal concentrates which contained 3.2 million lb. copper, 7 million lb. zinc, 5.8 million lb. lead and antimony and almost 9,000 oz. gold.

Equivalent silver production (which includes credits for gold and base metals) totalled 7.9 million oz. at an equivalent cost of US$1.82 per oz.

Rea Gold reported a net profit of $277,705 or 2¢ per share in 1990, compared to a loss of $2 million or 16¢ per share in 1989.

Canadian Arrow Mines Ltd. (CGR:TSE) has changed its transfer agent to Equity Transfer Services Inc.

Fraud charges laid in Perilya scandal

Three Australian prospectors have been charged with fraud after they persuaded **Noranda** (TSE) to buy a stake in a salted gold prospect near Karpa Spring in Western Australia. The three men were charged with conspiracy to defraud and obtaining property by means of false pretenses.

In July, 1990, an Australian junior company called Perilya Mines and Noranda jointly announced they had paid $6 million for a 30% stake in the Karpa Spring gold discovery, which was brought to them by the accused prospectors (*TNM*, July 23 /90).

Last summer, initial reports of spectacular drill assays from the Karpa Spring find sent shares of Perilya soaring on the Perth stock exchange. But within a few days, follow-up drilling by Noranda failed to duplicate the high-grade results.

The fraud squad began its investigation into the case last August after Perilya and Noranda complained to police in Perth. The companies also took the three men to court later that month in a bid to freeze their assets, including the purchase price.

Pezim juniors await financing

VANCOUVER — Murray Pezim's new flagship, **Prime Equities** (VSE), and a host of juniors under its corporate umbrella are expecting to announce details of an agreement with a major mining company for the provision of future senior financing.

The agreement was expected to have been announced this week, but it was delayed pending approval by the board of directors of the major's parent company. Prime Equities President Chet Idziszek would not disclose the identity of the major, except to describe it as an international mining company.

But persistent rumors are that senior financing to Pezim's stable of companies will be provided by **Kennecott**, owned by RTZ Corp. of Great Britain.

Placer Dome's 1990 output exceeds 1.4 million oz. gold

VANCOUVER — Contributions from two new gold mines helped boost **Placer Dome's** (TSE) share of gold production to just over 1.4 million oz. in 1990, from 1.18 million oz. produced in 1989 (net of minority interests).

The Granny Smith mine in Australia began commercial production in Feb., 1990, followed by the Porgera mine in Papua New Guinea in September. The new mines contributed a total of 163,600 oz. to the company's share of total gold production last year.

The company's average cash production cost declined to US$232 oz. from US$245 oz. in 1989. But total production cost increased to US$306 per oz. from US$299 per oz., primarily as a result of higher depreciation charges at new mines.

Gold earnings in 1990 were $106.5 million, $20.9 million higher than in 1989. Gold sales totalled $859.3 million at an average realized price of US$417 per oz., 53¢ per share, in 1989.

The fourth-quarter loss of $8.8 million was attributed to a $32.7 million writedown at year-end, the largest component being a $20-million ($30.2-million for the year) writedown of the Big Bell mine.

At year-end, Placer Dome calculated gold reserves of 16.5 million oz., a decrease from 18.9 million oz. reported at the end of 1989. However, several advanced exploration properties controlled by the company are reported to contain more than five million ounces gold not yet defined as reserves.

By the third quarter of 1991, Placer Dome expects to complete a feasibility study and reserve estimate for the Mt. Milligan copper-gold property in British Columbia.

And construction of a 16,500-ton-per-day plant at the La Coipa mine in Chile is expected to be completed under budget and on schedule this summer. Placer D...

Crown pillar caves in at Hope Brook mine

A portion of the crown pillar at **Hope Brook Gold's** (TSE) underground mine on the southwest coast of Newfoundland collapsed recently, but the company reported no injuries at the site.

As a result of the collapse, one of the underground stopes now connects with the floor of the open pit mine at the gold operation.

Hope Brook had been planning to collapse the crown pillar when the cave-in occurred, according to President John Auston. He said the company will continue a controlled collapse as part of an overall mining plan.

NO.38(1991)
FEBRUARY 22, 1991

George Cross News
"Reliable Reporting"

REA GOLD CORP. (REO-V,T; REOGF-Nasdaq)
1990 SAMATOSUM PRODUCTION SUMMARY

	1st	2nd	3rd	4th	Total
Tonnes Milled -	39,404	45,224	42,445	42,079	169,152
Silver Production (Ounces)-	2,200,000	1,416,000	799,000	985,000	5,400,000
Costs C$/Tonne	135.93	113.96	85.69	66.33	100.14
Equivalent Silver Production (Ounces)-	3,214,000	2,074,000	1,169,000	1,443,000	7,900,000
Equivalent Cost US$/Ounce -	1.38	2.10	2.65	1.65	1.82

HIGHER THROUGHPUT OFFSETS LOWER PRICES - Larry W. Reaugh, president, Rea Gold Corp., reports on operations in 1990 at the 30%-owned Samatosum mine near Kamloops, B.C. MINNOVA INC. (MVA-T,M) has a 70% interest with Rea Gold retaining a 5% net smelter return royalty. Almost 10% additional throughout to 511 short tons per day was maintained and helped offset lower silver and gold prices. More than 5,000,000 ounces of silver were produced into a total of 16,400 tonnes of base metal concentrates which contained 3,225,000 lbs copper, 7,099,000 lbs zinc, 5,831,000 lbs lead and antimony and almost 9,000 ounces of gold. Average silver recovery was 93.8% About $1,000,000 was spent on exploration with Rea paying $330,000. (SEE GCNL No.179, 17Sep90, P.1 FOR INTERIM REPORT)

82M 244

Founded 1915

Vol. 77 No. 4 CANADA'S MINING NEWSPAPER April 1, 1991

Icebreaker opens possibilities for Raglan nickel mine

by Olav Svela

The New Quebec Raglan project, **Falconbridge's** perennial mine of tomorrow, is inching closer to a production decision.

Recently, a freighter successfully navigated the winter ice and docked at an abandoned port in Deception Bay, 24 miles from the nickel-copper project on the Ungava Peninsula in northern Quebec.

To Mike Knuckey, Falconbridge's vice-president of exploration, such a feat suddenly extends the potential shipping season for this isolated project, 1,000 miles north of Montreal, well past the former three months the company thought it would have.

"One constraint has been the shipping season. We made this experimental voyage (in March) to see if we could get in at this time of year," he said. The voyage of the M.V. Arctic, a freighter upgraded to icebreaker status, means the shipping season could last up to eight months.

Falconbridge, jointly owned by **Noranda** (TSE) and the Swedish firm Trelleborg AB, is spending up to $20 million on the project this year. A pre-feasibility study should be in Knuckey's hands sometime this month. A positive report will lead to a full-scale feasibility.

The feasibility study will include environmental and social impact studies and some site preparation. The bulk of the money will be spent on an underground ramp, lateral work, drill stations and diamond drilling. The underground program should be over by this time next year.

Raglan is an enormous nickel-copper play that sole owner Falconbridge has coaxed along for years. Its remote location on the northern tip of the Ungava Peninsula is its impediment to development. The project involves a series of deposits along a 30-35-mile strike length; Falconbridge has focused its efforts on several of the deposits.

Reserves in one localized cluster of mineralized zones stand at 18.2 million tons grading 3.1% nickel and 0.8% copper, roughly double the grade of the company's Sudbury

See RAGLAN, Page 2

Claude finds new gold zone at Seabee project

by Virginia Heffernan

Saskatoon-based **Claude Resources** (TSE) has discovered a new zone of gold mineralization at the Seabee mine property in northern Saskatchewan.

The new discovery, known as the 161 zone, consists of multiple sub-parallel structures that have so far been delineated over a strike length of 500 ft. and to a depth of 600 ft.

Results include a 16.4 ft. interval grading 0.32 oz. gold per ton at 470 ft. and a 52.5 ft. interval grading 1.23 oz. at 135 ft.

Claude says mineralization in the 161 zone is similar to that in the No. 2 and No. 5 deposits, which contain total reserves of 1.14 million tons grading 0.40 oz.

Last month, Seabee was given the production go-ahead by the Saskatchewan environment ministry. Claude expects to be producing 52,000 oz. per year by the beginning of November.

82M 244

Samatosum may have new zone below known reserves

VANCOUVER — Underground drilling at the Samatosum mine has intersected high-grade mineralization 10 metres below the known extent of reserves.

The Samatosum mine, near Kamloops, B.C., is a 70-30 joint venture between **Minnova** (TSE) and **Rea Gold** (TSE). Rea also holds a 5% net smelter royalty.

The intersects were made on two adjacent sections about 20 metres apart. Hole U1330-38 cut 2.1 metres from 54.8 to 56.9 metres grading 0.82% copper, 3.36% lead, 4.43% zinc, plus 87 grams silver and 37.08 grams gold per tonne.

Hole U1330-43 intersected 2.3 metres from 67.6 to 69.9 metres grading 0.79% copper, 4.02% lead, 8.27% zinc, plus 165 grams silver and 11.16 grams gold. The hole cut a further 11 metres from 77.9 to 88.9 metres grading 0.43% copper, 2% lead, 3.23% zinc, plus 67 grams silver and 7.29 grams gold.

Fred Sveinson, vice-president of Rea, noted the higher gold grades indicate the intersections represent a different mineralized zone than that presently being mined.

As of Dec. 31, 1990, the mine had reserves of 483,000 tonnes grading 1% copper, 2.5% zinc, 1.5% lead, 685 grams silver and 1.4 grams gold giving the mine sufficient reserves to the end of 1993.

The drilling was part of a

See SAMATOSUM, Page 2

Photo by George Onuska

Geologist George Podolsky, delivering his acceptance speech at the PDAC's annual convention banquet, received a Special Achievement award for his act of bravery in 1958 when, despite dislocated ankles and the loss of his spectacles, he managed to keep three fellow airplane crash victims alive.

Quebec offers bright spot as PDAC rides out rocky time

Virginia Heffernan

There was a hint of anxiety in the air at this year's annual Prospectors and Developers Association of Canada (PDAC) convention in Toronto, as representatives of the mining community pondered a rocky road ahead.

While company executives called for immediate action to improve mining's battered public image, unemployed exploration geologists roamed the halls hoping to find that elusive job lead.

greeted by a receptive audience that, at times, came close to filling the Royal York Hotel's expansive Concert Hall.

"The technical program has been very successful," said Saley Lawton, a PDAC spokesperson. "The papers have been excellent, especially the talks on the environment."

The core shack was a hive of activity and excitement as delegates examined core from some of 1990's best exploration plays, including the Lynne zinc project in Wisconsin, the

vest gold deposit in northrn Ontario and the Grevet er-zinc play in Quebec.

id, despite a disastrous fisear, including millions of irs in writedowns, dele- were determined to have od time as they splurged on stocked hotel suites and idled old friendships.

keeping with the conven- 's theme, "Mining's vital in society," Pickard and w speaker Kirkland Lake or Joe Mavrinac stressed part mining has played in ding and sustaining Cana- northern communities.

ven New Democratic Party ler Audrey McLaughlin had ood word to say about the orical contribution mining made to the Yukon, her n constituency. Although bulk of her luncheon ech was devoted to the stion of national unity, she offer tentative support for ebec's exploration incentive ogram at a press conference

See RIDING, Page 2

Samatosum

From Page 1

program designed to better define underground reserves before operations move from open pit mining to underground next year.

Previous surface drilling in the same area failed to intersect the high-grade mineralization which would indicate the extent of the zone is limited and possibly steeply plunging.

Further drilling is planned to better define the zone, although Sveinson said additional underground development may be required before drilling can begin.

Rea reported earnings of $278,000 for the year ended Dec. 31, compared with a loss of $2 million in 1989. The Samatosum mine did not start commercial production until July 1, 1989, and the year-earlier period included an extraordinary loss of $1.3 million.

Cash flow from operations for 1990 was $3.8 million.

Thunderwood hits wide values at Scott Lake

by Peter Kennedy

Scott Lake base metal project partners **Greenstone Resources** (TSE) and **Thunderwood Resources** (TSE) have intersected a large copper-zinc-rich stringer zone at the Chibougamau, Que., area property.

The new zone is indicated by assays in hole SL-91-83, which intersected 681.6 ft. of 0.45% copper and 0.74% zinc within massive, semi-massive and stringer pyrrhotite and chalcopyrite mineralization.

The tenth hole of a recently completed 15,000-ft. program, SL-91-83, was collared in an area one mile west of a drilled-off deposit estimated to contain 777,000 tons grading 6.87% zinc, 0.41% copper, 0.34 oz. silver and 0.01 oz. gold per ton.

As copper and zinc mineralization was intersected at a depth of 1,800-ft. below surface, grades are uneconomic at current prices. But as all the geological inferences point to a significant massive sulphide discovery somewhere in the vicinity of SL-91-83, Thunderwood President John Heslop is excited about the Scott Lake find.

Heslop and Greenstone President Ian Park are also encouraged by the fact that no drilling has occurred within 2,000 ft. east of SL-91-83, which is the deepest hole to be drilled on the property to date.

On March 26, the day before the announcement, speculation on the results drove the Thunderwood issue up 34¢ to $1.19 with 1.8 million shares changing hands. On the same day, Greenstone also advanced by 48¢ to $2.83 on a volume of 77,025 shares.

"Hole 83 tells you there is one hell of a lot of metal in the system," said Heslop, who believes the stringer zon

See SC(

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Euros, Thios come up with Rock & Roll reserve figure

VANCOUVER — A preliminary reserve estimate was released by **Eurus Resource** (VSE) and **Thios Resources** (VSE) for their joint venture Rock & Roll property in the Iskut River region of northwestern British Columbia.

The project is estimated to contain a total of 640,000 tons grading 0.072 oz. gold, 9.8 oz. silver per ton, 3.08% zinc, 0.79% lead and 0.64% copper.

This preliminary reserve calculation was done in-house for Eurus and Thios by Prime Explorations, which manages the exploration program on the property. No assays were cut, and no dilution factor was applied.

The calculation was based on 29 out of 70 holes that intersected the Black Dog deposit within the Black Dog horizon, and one drill hole on the new discovery known as the SRV zone. The average weighted true thickness of the intercepts used to calculate the reserve is 15.5 ft.

The companies view the potential to increase reserves on the property as excellent. Drilling to date has only tested a strike length of about 2,296 ft., or roughly 10% of the total length of the airborne geophysical anomalies trend.

The companies also noted that only shallow drilling has been completed so far, and subsequent drilling is planned to follow the Black Dog deposit to at least three times its currently known downdip extent.

More drilling is also planned to delineate the extent of the SRV zone, and to test other targets on the property.

Strike length extended for new zone at Samatosum

82M244

VANCOUVER — Underground drilling at the Samatosum mine near Kamloops, B.C., has extended the strike length of the new zone of mineralization to about 50 metres in total.

The Samatosum mine is owned 70% by **Minnova** (TSE) and 30% by **Rea Gold** (TSE) which also holds a 5% net smelter royalty.

Two previously released holes (U1330-38 and U1330-43) intersected the zone about 10 metres below the known extent of the Sam zone which is presently being mined by open pit.

The latest hole, U1330-83, intersected 8.5 metres grading 0.87% copper, 1.66% lead, 0.65% zinc, and 102 grams silver plus 9.5 grams gold per tonne. About 1.5 metres below this intersection, the hole encountered a lower-grade section measuring 1.8 metres grading 0.11% copper, 0.17% lead, 0.43% zinc, 13.4 grams silver and 1.1 grams gold per tonne.

Vangold drilling returns 15 ft. grading 0.41 oz. gold per ton

VANCOUVER — Recent drilling by **Vangold Resources** (VSE) intersected 14.8 ft. grading 0.41 oz. gold per ton on the Gertrude property in the historic Rossland mining camp of southern British Columbia.

The camp is best known for the Le Roi and other mines where production from 1891-1928 totalled 6.2 million tons at a recovered grade of 0.47 oz. gold, 0.6 oz. silver, and 1% copper per ton.

The discovery hole was targeted 350 ft. west and completely above the working levels of the historic Main War Eagle/Number One vein which produced 600,000 oz. gold at the turn of the century.

Vangold is earning a 60% interest in the Gertrude claim and in a number of other claims making up the North Belt property package held by **Antelope Resources** (VSE) and **Bryndon Ventures** (TSE) in the Rossland camp.

The Gertrude claim sits as a single unit completely surrounded by ground held by Cominco Ltd. This year's exploratory drill program is believed to be the first known drill program on the claim which was not explored because of its sedimentary cap.

Although more work is planned for the Gertrude claim this year, Vangold is currently investigating options to drill prove, develop and process high-grade preliminary reserves on the Iron Colt zone on the joint venture's North Belt properties.

So far, 43,715 ft. of diamond drilling in 108 holes have been completed on the North Belt properties. This work has the joint venture reporting preliminary reserves of 180,634 tons grading 0.37 oz. gold per ton.

Contained within this estimate is a higher-grade preliminary reserve on the Iron Colt vein of 22,000 tons grading 3 oz. gold, which is still open in all directions.

Vangold is planning an underground program aimed at proving up reserves on the Iron Colt vein. The program will also include several deeper holes to test the gold-bearing system to depth.

Placer Dome ups stake in Cache

Vancouver-based **Placer Dome** (TSE) recently increased its stake in **Cache Explorations** (ME) to 20.5% from 12.5% by purchasing an additional 600,000 shares of Cache at $1 per share. Cache shares recently traded in the 40¢ range.

Cache has been focusing its exploration efforts on a gold

Pioneer settles with Westmin

VANCOUVER — A tentative agreement between **Westmin Resources** (TSE) and **Pioneer Metals** (TSE) calls for Pioneer to transfer to Westmin its 40% interest in the Premier Gold project near Stewart, B.C.

In return, Westmin would forgive a debt of over $18 million owed to it by Pioneer. The settlement is still conditional upon the consent of Pioneer's major lender, which holds a charge on Pioneer's interest in the project.

If the agreement is executed, Westmin would own 100% of the gold-silver mining operation which includes a mill with a capacity of 2,200 tons per day.

Pioneer will retain a 1% net

Hecla revises CoCa merger

VANCOUVER — A merger agreement between **Hecla Mining** (NYSE) and **CoCa Mines** (NASDAQ) has been amended in order to establish the number of Hecla common shares to be issued in Hecla's acquisition of CoCa.

The number of Hecla shares to be issued is 3.08 million, for a value to CoCa shareholders of about US$29.7 million.

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George Cross News
"Reliable Reporting"
WESTERN CANADIAN INVESTI

REA GOLD CORP. (REO-V,T; REOGF-Nasdaq)

NEW SAMATOSUM MINERALIZATION DISCOVERED - Frederick J. Sveinson, vice president, reports new base and precious metal mineralization has been discovered below the known Sam mineralization on two adjacent sections 20 meters apart at the Samatosum mine located 60 miles northeast of Kamloops, B.C. The mine is a joint venture between MINNOVA INC. (MVA-T,M) with a 70% interest and Rea Gold with 30% plus a 5% net smelter return royalty. Underground diamond drill holes cut the values below:

Drill Hole U1330-38, Section 96+80mW, 045°Az, -85°
Depth 73.8 meters, Elev. 1275 meters

INTERVAL METERS	LENGTH METERS	COPPER %	LEAD %	ZINC %	SILVER GRMS/T	GOLD GR/T
54.8 - 56.9	2.1	0.82	3.36	4.43	87.0	37.08*
Drill Hole U1330-43, Section 97+00MW, 045°Az, -80° Depth 105.2 meters, Elev.1275 meters						
67.6 - 69.9	2.3	.79	4.02	8.27	165.0	11.16*
77.9 - 88.9	11.0	.43	2.00	3.23	67.0	7.29*

* Uncut

The intersections were made while attempting to located the Sam orebody down-dip and are comprised of semi-massive to massive pyritic zones. The strike, dip and extent of the zone is unknown, as is its relationship to the Samatosum orebody, other than it is below the proposed underground mining by about 10 meters.

Previous surface drill coverage in the area failed to intersect similar mineralization, suggesting the zone is compact and possibly steeply-dipping. It is not known whether these intersections are true thicknesses as more intercepts will be required. Additional drilling is planned to determine geomtery and extent.

(SEE GCNL No.49, 11Mar91, P.1 FOR YEAR-END DATA)

82 M 244

George Cross
Reliable
WESTERN CANADI

NO.179(1990)
SEPTEMBER 17, 1990

REA GOLD CORP. (REO-V,T; REOGF-Nasdaq)

	THREE MONTHS ENDED JUNE 30 1990	SIX MONTHS ENDED JUNE 30 1990	1989
Revenue	$3,201,083	$8,169,854	$199,400
Expenses	2,998,832	6,601,963	417,903
Net Earnings (Loss)	201,251	1,567,450	(218,503)
Earnings (Loss) Per Share	1¢	11¢	(1¢)
Cash at End of Period	$792,437	$792,437	$3,745,522
Production - Silver	1,416,000 (8.7% below forecast))		
Gold (Oz)	2,371 (18.9% below forecast)		
Mill Throughput	45,224 (17.6% above forecast)		

NOTE: Comparative figures have not been presented for the three months ended June 30/89 since commercial production at the Samatosum mine began July 1/89.

INTERIM REPORT - Larry W. Reaugh, president, Rea Gold Corp., reports second quarter revenues for the Rea Gold 30%/MINNOVA INC. 70% joint venture at the Samatosum mine near Kamloops, B.C. were 18% less than forecast. Rea Gold also has a 5% net smelter return royalty. Year to date revenues were $23,146,000 or 5% less than plan. Lower reveunues were due to lower feed grades, lower metal prices, the high Canadian dollar and increased stripping costs from a slide in the pit wall. Operating costs were $114 per tonne compared to forecast of $123 per tonne and year to date operating costs were less than forecast at $124 per tonne, or -7%. Operating costs/oz. of silver for the quarter were US$3.12 and year to date costs were US$2.47 compared to the planned US$2.52/oz. and US$2.48/oz. respectively. Operating costs per equivalent ounce of silver including gold and base metals were US$211 for the quarter and US$1.69 year to date.

Year to date production was 3,617,000 ounces of silver and 6,401 ounces of gold, above forecast by 6.8% and 2.1% respectively. Feed grades were loweer due to over-extrapolation of high grade intersections resulting in less reserves and higher dilution on the lower grade benches. More waste was moved in the pit, mainly to compensate for higher milled tonnage and slide material caused by a cross fault in the pit wall. Mill throughput at 45,224 tonnes was again over plan for the quarter by 17.6% and year to date throughput was over plan by 10.7%. Recoveries for all metals year to date are above forecasts except for zinc which was off by 9.2%.

Rea Gold's 30% share of operating profits was $920,000 and the 5% NSR was $447,000 with year to date 30% share at $3,291,000 and 5% NSR at $1,157,000. Cash flow for the quarter was $905,472 with non-cash depreciation and amortization charges of $704,221 added to net earnings. (SEE GCNL No.90, 9May90, P.1 FOR PREVIOUS FINANCIALS)

82M 244

Tenajon drilling at SB gives high values over good widths

VANCOUVER — Assay results were released by **Tenajon Resources** (VSE) from several holes previously reported to have intersected visible gold on the SB property, north of Stewart, B.C.

The drilling was part of a recently completed 13-hole surface drill program totalling 6,880 ft. on the West Kansas zone. The zone does not yet have any tonnage assigned to it and is outside of current reserves totalling 308,000 tons grading 0.5 oz. (0.35 oz. cut) gold and 1.07 oz. silver per ton.

Westmin Resources (TSE) can earn a 50% interest in the SB project through exploration expenditures and by completing a feasibility study. The property is within trucking distance of a 2,200-ton-per-day mill at Westmin's 50.1% owned Premier Gold project.

The 1990 surface drill program at SB was carried out south and along strike from the underground drill program which was focused on expanding reserves and exploring several new zones.

Tenajon said the exploration program on the property has been completed under budget and plans are under way to expand the surface drill program.

Assay results are as follows, with holes 17, 20 and 25 being three of the four holes containing visible gold;

Hole	Intercept (ft)	Length (ft)	Gold oz/ton	Silver oz/ton
90-16	429.8-439.0	9.2	0.08	0.01
90-17	474.0-503.5	29.5	0.36	2.34
90-18	416.7-428.9	13.1	0.20	0.80
90-19	211.6-221.4	9.8	0.24	1.45
90-20	277.9-281.2	3.3	0.31	0.57
	307.4-333.6	26.2	0.55	0.22
	420.0-423.3	3.3	3.99*	2.47
90-25	264.4-280.9	16.5	0.30	0.71
	301.2-307.8	6.6	10.24	7.45

*incomplete, adjoining assays to come

Samatosum profits fall short of Rea Gold's expectations 82M244

VANCOUVER — Although profit from the Samatosum mine owned 30% by **Rea Gold** (TSE) came in below expectations, it would be difficult to call the numbers disappointing.

Operating profit from the mine accruing to Rea totalled $920,000 plus an additional $447,000 from its 5% net smelter royalty interest during the three months ended June 30.

For the first half of 1990, the company reported an operating profit from the mine of $3.3 million plus $1.2 million from the 5% net smelter royalty.

Minnova (TSE) is the operator and holds the remaining 70% interest of the Samatosum mine, near Kamloops, B.C.

Mill throughput during the second quarter reached 45,000 tonnes, over plan by 10.7%. Operating costs for the quarter were lower than expected, averaged $114 per tonne while operating costs for the first half were $124 per tonne.

Operating costs per ounce of silver produced, including gold and base metal credits were US$2.11 per oz. for the quarter and US$1.69 for the half. Before gold and base metal credits silver costs were US$2.47 and US$2.52 per oz. respectively.

The per-ounce cost was adversely affected by lower than expected grades. The company attributed the lower grades to over-extrapolation of high-grade intersections.

Costs were also adversely effected by a slide in the pit caused by a cross fault in the pit wall.

Silver production for the half totaled 3.62 million oz. while gold production was 6,401 oz.

Revenues for the joint venture during the quarter were $8.9 million, or about 18% less than planned due to lower metal prices and the high value of the Canadian dollar.

Rea reported earnings for the six months ended June 30 of $1.6 million on revenues of $8.2 million. Cash flow for the half was $3.4 million, compared with $905,000 for the second quarter.

As a result of the success of the Samatosum, Rea's balance sheet has improved markedly over the period, with no long-term debt remaining and working capital of about $2.8 million. The company has about 13.5 million shares outstanding and recently traded near the year low of $1.50 per share.

Rea Gold (TSE)		
6 months ended June 30	1990	1989
Revenue	$8,169	$199
Net earnings (loss)	1,567	(219)
per share	0.11	(0.01)

Development continuing at Francoeur despite mining halt

ROUYN-NORANDA, Que. — At **Rouyn Mining Resources'** (TSE, ME) Francoeur mine, the focus has shifted from mining to reserve development.

Mining was stopped in late June because it was too costly. According to President Jean-Guy Rivard, it wasn't that mining or milling costs were excessive. Rather, the $9-10 per ton to ship ore to LAC Minerals' East Malartic complex for custom milling scuttled profitable mining at Francoeur. LAC is a 50% owner in Francoeur and Rouyn is the operator.

Recently, LAC had fielded an expression of interest in its 50% share from a major company, but by press-time there had been no indications of a pending sale.

Rivard has directed the Francoeur staff to try to develop enough proven ore — one million tons is the target per ton. Another 618,000 tons is classed as probable ore.

Rouyn can survive non-operating status for a couple of years from the cash in its treasury — roughly about $5.4 million in cash and short-term securities. Rivard wants a mill on-site by March, 1992.

He said he aims to raise money to cover mill capital costs through either a gold loan or conventional debt financing.

Cheni cuts down Lawyers' reserves

VANCOUVER — This summer's exploration program on the Lawyers property, owned by **Cheni Gold Mines** (TSE), has proved disappointing for the junior gold producer.

The 100% owned Lawyers Mine is in the Toodoggone region of north-central British Columbia.

The work program included stepout and infill drilling on the Cliff Creek zone, located to the southwest of the current mining operations at the AGB zone.

Previous work had outlined mineralized zones on each end of the 3,000 ft.-long northwesterly trending structure. The company had assigned probable reserves to the Cliff Creek zone of 838,900 tons grading 7.1 oz. silver and 0.18 oz. gold per ton, plus possible reserves of 524,500 tons grading 6.6 oz. silver and 0.17 oz. gold.

Drilling between sections 4350 NW and 4800 NW (about 1,500 ft.) returned no significant intersections while infill drilling on section 4200 NW, where a strong mineralized zone was encountered in 1987, indicates that continuity is limited.

In addition, the results of core logging and analytical work show that precious metal values are erratic and are hosted by a relatively tight structure.

As a result of the program, Cheni has downgraded the reserves in the Cliff Creek zone to 466,000 tons of probable reserves grading 0.19 oz. gold, and 7.7 oz. silver. Possible reserves total 114,000 tons grading 0.17 oz. gold, and 7.8 oz. silver.

The company reports that underground development on the Cliff Creek north zone is proceeding and that the decline has intersected the zone at the 1650 elevation. Cheni plans to continue work to develop production levels above and below the 1650 elevation as well as to begin an underground drilling program to define oreshoots and explore downdip extensions.

Noranda increases stake in Louvem

While negotiations continue between **Societe Miniere Louvem** (TSE) and Noranda Minerals over a major share purchase by the latter in Louvem, Noranda has gone ahead with a small stock acquisition.

Noranda Minerals, a unit of **Noranda** (TSE), recently exercised an option, pursuant to an earlier agreement, to subscribe to 400,000 treasury common shares of Louvem at $10.50 per share.

Noranda now owns more than 4.1 million shares of Louvem, representing a 22.7% interest in the Montreal-based company.

Louvem is one of the principal players in the Louvicourt Twp. massive sulphide discovery near Val d'Or, Que. The base metal find is the subject of an ownership dispute between Louvem and **Aur Resources** (TSE) of Toronto.

The corporate parent of Louvem, **St. Genevieve Resources** (TSE), recently tried unsuccessfully to settle its legal dispute with Aur and sell Noranda a controlling interest in Louvem. The settlement fell through after Noranda was awarded a temporary injunction by a Quebec court.

St. Genevieve Chairman Pierre Gauthier has since placed a time limit on his latest negotiations with Noranda. Gauthier says Noranda has until Sept. 10 to decide whether to buy 4.1 million shares of Louvem at $8.10 per share.

Analysts say Noranda considers the $8.10 share price to be too high.

Drilling below 1,000-ft. level enhances Casa Berardi East

Exploration below the 1,000-ft. level at the Casa Berardi East mine near La Sarre, Que., continues to produce encouraging results for partners **TVX Gold** (TSE) and **Golden Knight Resources** (TSE).

Golden Knight, which holds a 40% project interest, says a $2.4-million program designed to extend known mineralization below 1,000 ft. indicates that the main zone continues down to at least the 1,650-ft. level. TVX holds the other 60% at Casa Berardi where most of the holes drilled below 1,000 ft. have encountered economic grades of mineralization.

The latest results from a 50,000-ft. program include 41.3 ft. of grade 1.09 oz. gold per ton (including 9.8 ft. of 3.96 oz.) at a depth of 1,410 ft.

A second hole intersected 22 ft. of grade 0.91 oz. at 1,600 ft.

"In addition to the main zone, a smaller, hangingwall vein was intersected," said Gary Jones, assistant vice-president of operations. One hole averaged 0.77 oz. over 8.5 ft., he said.

By June 15, the joint venture had completed six holes and drilling continues to further outline the mineralization on strike and at depth. Crews, which are currently drilling from stations spaced about 150 ft. apart, are expected to complete this exploration phase early next year.

"You always say mineralization continues below a certain level, but now we know it does," said Stephen Sopher, executive vice-president at TVX Gold.

LAC, Bond deal only needs minority shareholders' OK

LAC Minerals' (TSE) new sweeter offer for the remaining shares of 64.7% owned **Bond International Gold** (TSE) it doesn't already own was recently approved by directors of both companies.

Under the offer, LAC is proposing to exchange 0.71 of its own common shares for each outstanding share of BIG, compared with the 0.53 offered in February.

As the new offer has the verbal backing of influential New York banker Goldman Sachs & Co., analysts expect minority shareholders to signal their approval at a special meeting called to consider the offer, Aug. 20.

Based on the July 5 closing price of $9 for LAC shares, the offer values Bond at $6.39 compared to $5.63, the level at which Bond shares traded in New York on the same day. There are currently 57.6 million issued Bond shares, of which 37.3 million are held by LAC.

Should the merger go ahead, LAC will automatically become North America's fourth largest gold producer with annual output of over one million ounces from 13 mining operations in North and South America.

While directors of LAC and Bond acted on advice from an independent committee in approving the merger offer, it is still subject to a completion of the Arrangement Agreement. It must also be approved by the majority of minority shareholders representing 75% of the shares represented in person or by proxy at a special shareholders' meeting.

Shareholders of record as of July 19, 1991, will be eligible to vote on the merger proposal at that meeting and a proxy circular is scheduled to be mailed out to all shareholders on July 17.

Analysts including Midland Walwyn Capital Inc.'s Michael Jalonen considered LAC's original offer of 0.53 of a share for each share of Bond to be too low because it didn't take into consideration reserves at the El Indio gold mine in Chile, one of five gold mines held by Bond.

At year-end, El Indio hosted 12.2 million tons grading 0.14 oz. gold per ton of proven and probable reserves. It also accounted for 34% of the 628,859 oz. produced by BIG in 1990.

By contrast, LAC's share of production from six mines last year was 401,959.

The new offer is considered generous by Jalonen, who claims it should allow LAC to concentrate its own mines including the Bousquet No. 2 in Quebec which analysts are scheduled to visit July 15-16.

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SB mine on track

VANCOUVER — The first batch of development ore from the SB gold property is being processed at **Westmin Resources'** (TSE) Premier gold mill near Stewart, B.C.

About 15,000 tons are expected to be processed during the first mill run in early July. Westmin operates the SB project and is earning a 50% interest from **Tenajon Resources** (VSE).

Production preparation of the SB property is reported to be progressing well, with development ore being mined and trucked to the stockpile at the Premier gold mine site.

Tenajon said grades to date from all blocks within the 35 zone have been as good as or better than anticipated.

Program at Samatosum hits zone with coarse, visible gold

VANCOUVER — Drilling within the Samatosum mine area has intersected a new zone of gold mineralization.

The Samatosum open pit silver-copper-zinc-lead-gold mine is near Adams Lake, B.C., and is 70% owned by **Minnova** (TSE) and 30% owned by **Rea Gold** (TSE). Rea also has a 5% net smelter royalty interest.

Fred Sveinson, vice-president of Rea, said the discovery was made during a recent program of exploration holes along the horizon which hosts the Samatosum orebody.

Visible coarse gold was intersected by hole RG 398 within milky white quartz carbonate veins.

The hole intersected 2.1 metres from 156.3 metres to 158.4 metres grading 40.03 grams gold per tonne uncut (6.89 grams per tonne cut to 35 grams per tonne). The hole also intersected 0.5 metres grading 5.90 grams per tonne (uncut) from 232.9 metres to 233.4 metres, and 5.36 grams gold per tonne (uncut) from 235.3 metres to 240.2 metres.

The drill hole is about 2,000 metres to the northwest of the current mining operations.

The companies are now in the process of drilling stepout holes 100 metres to the north-west and 100 metres to the southwest of hole RG 398 as well as a third hole updip from the intersection.

Wildcat hole under way at Cobalt

A wildcat hole designed to test for deep-seated base metal deposits is under way at **Agnico-Eagle Mines'** (TSE) property in Coleman Twp., near Cobalt, Ont.

Legacy Explorations (CDN), which is earning a 40% interest in the claims, had reached a vertical depth of 1,876 ft. when contacted by *The Northern Miner*.

Progressing at an average rate of 160 ft. per day, Legacy should reach its 4,000-ft. target depth by the end of this month. Using the theory that the silver mineralization is underlain by a layer of base metal sulphides, the company has collared its first hole directly above the old O'Brien mine.

"Thirty years ago (when the Cobalt silver mines were in their heyday), we would just leave the base metals because we didn't want to fiddle around with putting them through our mills," said Norman Sheriff, president of Legacy. "Now the old mines are dead and we've decided to take a chance on base metals."

In 1990, the last of the Cobalt-area silver mines was closed, ending an 87-year span of continuous production.

Founded 1915

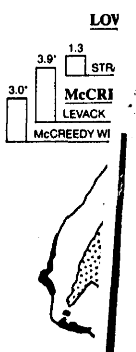
...ill open ...ng other mines

...eigh mine, which will not be ...ng, the company receives its ... plus $5 per lb. from Ontario ...o, the mine's only customer.

...though he would not disclose ...ng costs at Stanleigh, John ...ks, Rio's manager of commu...ions, said that costs "are in ...ss of three times spot prices." ...rio Hydro is then buying a ...d of uranium from Stanleigh ...bout $32 or more than three ...s the spot price. The Quirke ... Panel mines are known to be ... efficient than Stanleigh. As a ...lt, costs to produce a pound of ...ium from these mines are much ...er.

...1990, Rio's three mines are ...cted to produce approximately ...million pounds of uranium. ...r Quirke and Panel are closed, ...leigh will continue servicing ...ydro contracts, well past the ...2020. "The contract calls for ... million pounds per year," ...ks said. "However, Rio and ...ro have agreed to defer 28% of ...luction for future delivery."

...he closure of the two mines ... affect 1,600 employees in Elliot ...e. Also, Rio Algom will make ...ovision of $85 million against ...) earnings to cover the shut...n costs.



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See NEW, Page 23

Minnova

From Page 1

"oxide cap" was not fully known before production began as the material is soft and difficult to recover in drilling. Rea Gold said a small tonnage of high lead oxide ore has been stockpiled for later processing.

The mill is fed from an open pit, but in the later years of the mine life, there will be a transition stage into underground reserves.

Revenues from the mining operation are about 55-60% from silver, 20% from zinc, 10% from gold and the balance from copper and lead. Rea Gold President Larry Reaugh said financial results for the company's latest quarter (ended Dec. 31) would be released about mid-February.

Minnova is continuing exploration on the Samatosum property to expand reserves reported at the start of production as 851,400 tons of 26.7 oz. silver, 0.04 oz. gold, 2.9% zinc, 1.4% lead and 1% copper. A number of favorable geological targets located in previous programs will be drill-tested, including some deep exploratory holes later in the season.

A company under the **Noranda** (TSE) corporate umbrella, Minnova has also been exploring a large land package near the Samatosum mine property.

Samatosum beats recoveries made during tune-up

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VANCOUVER — Higher grades and concentrate recoveries are being reported for the Samatosum polymetal mine operated by **Minnova** (TSE) near Kamloops, B.C.

Sized at 550 tons per day, the Samatosum mine started commercial production in July, 1989, at a capital cost of $32 million. Minnova owns 70%, while **Rea Gold** (TSE) has a 30% interest and 5% net smelter return royalty.

Silver production into concentrates at the mine in the first three weeks of January was 383,000 oz., a substantial increase over recoveries during the tune-up phase.

Rea Gold said this improved production performance is the result of better metal recoveries and higher throughput in the concentrating plant and slightly higher head grades of the ore feed.

Ore grade during the period was 1.3% copper, 3.8% lead, 5.7% zinc and 36.5 oz. silver per ton. Concentrate overall recoveries were 89% copper, 79% lead, 90% zinc and 90% silver.

The Samatosum mine produces three concentrates. During the first three weeks of January, the copper concentrate grades were 27% copper, 710 oz. silver, 16% lead and 5% zinc. Lead concentrate grades were 29% lead, 160 oz. silver, 5% copper and 18% zinc while the zinc concentrate grades were 51% zinc, 30 oz. silver, 5% lead and 1% copper.

It was noted that the substantial increases in concentrate grades was because mine development had progressed to the point where feed could be blended from several stockpiles to establish a more consistent head grade. In addition, recoveries were increased and chemical costs reduced as a result of a number of reagent changes.

In the early months of production, it was found that some of the near-surface ores carried above average oxide content which hinders metallurgical results. The extent of this

See MINNOVA, Page 2

...art of Cobalt-area land caution

Reopening the land for pros...ing and staking will provide ...omic stimulus to the Temiska...g area, while lifting the caution ...result in opportunities for min... development and mining out... the Teme-Augama Anishnabai ... claim," said Mines Minister ...h O'Neil during a news confer... at the Haileybury School of ...es, Jan. 25.

...he president of the Northern ...pectors' Association, Mike Leahy, is predicting heavy interest in the soon-to-be-opened lands, especially in the Cobalt area. "A lot of the majors have already set aside money for exploration in this area in anticipation of the caution being lifted," Leahy said.

The area in question stretches from the Temagami district to a point just a few kilometers south of Timmins. "The exact parameters of the land to be reopened still have to be finalized," O'Neil said.

Mike Cherry, the acting head of the precambrian geology section of the Ontario Geological Survey, says the area being opened up has potential for gold and base metals. "However, our knowledge is based on a mature database," he said.

In 1981, an OGS study compared the Lorrain formation, west of Cobalt, with the Witwatersrand Basin in South Africa. Cherry says the political climate has prevented

See LAND, Page 2

GEN

...renew majors' exploration in B.C.

...There's no question juniors are ...ing it tougher to raise money," ...aid. "And if base metal prices ...inue to weaken, the majors will ...y curtail some of their explora... spending down the road as ..."

...e final numbers aren't tallied ... but according to the British ...mbia & Yukon Chamber of ... spent in 1988.

On the other hand, expenditures by majors are expected to reach $80 million, which would represent a substantial increase from the $63 million spent in 1988.

Because of the renewed interest in base metals from companies of all sizes, these expenditures were widely distributed throughout the

"The eggs are no longer all in one basket," he said, noting that the large-scale base metal or polymetal projects have more impact on the province's economy with respect to job creation and mining revenues than smaller-scale gold mining operations.

Among the major plays that dominated the scene in the past year

George Cross
Reliable K

NO.19(1990)
JANUARY 26, 1990

WESTERN CANADA

REA GOLD CORPORATION (REO-T,V:REOGF-Nasdaq)

1990 STARTED WITH HIGHER GRADES AND CONCENTRATE RECOVERIES - Silver production into concentrates at the Samatosum mine in the first three weeks of January 1990 was 383,000 troy ounces, a substantial increase over recoveries during the tune-up period. The increased production has resulted from improved metal recoveries and higher throughputs in the concentrating plant and slightly higher head grades of the ore feed.

The 500-tonne daily capacity mine, located on Adams Plateau, 28 miles northeast of Kamloops, B.C, started commerical production on July 1989 at a capital cost of $32,200,000. Rea Gold holds a 5% net smelter return royalty and a 30% working interest with Minnova Inc., operator, holding a 70% working interest.

Ore grades during the first 3 weeks of January have been: copper 1.3%, lead 3.8%, zinc 5.7% and silver 36.5 troy oz. per short ton. Concentrator overall recoveries were: 89 % copper; 79% lead; 90% zinc and 90% silver. The concentrate grades have shown substantial increases because the mine development has progressed to the point that ore feed to the plant can be blended from several stockpiles to establish a more consistent head grade. A number of reagent changes have been made which have increased recoveries and reduced chemical costs. In the early months of production some of the near-surface ores carried above average oxide content. A small tonnage of higher lead oxide ore has been stockpiled for later processing.

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The average concentrate grade during the first three weeks of January 1990, were:
Copper concentrates: 27% copper, 710 oz. troy oz. silver per short ton, 16% lead, 5% zinc;
Lead concentrate: 29% lead, 160 oz. troy oz. silver per short ton, 5% copper, 18% zinc;
Zinc concentrate: 51% zinc, 30 oz. troy oz. silver per short ton, 5% lead, 1% copper. Revenues from the operation are 55% to 60% from silver, 20% from zinc, 10% from gold and the balance from copper and lead.

Mining from the open pit has resumed after having been suspended over the holiday season.

Exploration of a number of favourable geological targets located in previous programs has resume this month with plans for drill testing, including some deep exploratory holes, later in the season. The objective is to expand ore reserves which were calculated at start-up at to be 774,000 tonnes containing 831 grams per tonne, 26.7 oz.silver per ton, 1.6 grams gold per tonne 2.9% zinc. 1.4% lead, 1% copper.