

viable or more profitable. This presentation will discuss the legal considerations and issues when managing employees out of the organization.

**Paper No. 103 — 16:30**

*Education and the Petroleum Technologist.*

BRIAN A. MCGEE, Northern Alberta Institute of Technology, Edmonton, Alberta

The petroleum industry has asked for and now will receive people trained for 2000 hours in the skills of petroleum engineering.

Their training prepares them to perform support functions in production and exploration areas. Their employment is divided into the two segments of oil companies and service companies.

The historical development of these courses and the shifts in educational patterns are outlined. Pertinent additions in training, such as computer literacy and formation evaluation are detailed.

An overview of student skills and the future of Alberta's post-secondary specialized training for the petroleum industry are projected.

**Paper No. 104 — 17:00**

*A Study of Problems Relating to Mining Engineering University Education.*

M. SCOBLE, Department of Mining and Metallurgical Engineering, McGill University, Montreal, Quebec,

A. PICHE, Département de Génie minéral, École Polytechnique, Montréal, Québec, and

C. PELLEY, Department of Mining Engineering, Queen's University, Kingston, Ontario

The Canadian mining industry faces the prospects of a severe shortage of graduate mining engineers over the next decade. This arises from three factors: first, a growth in industrial activity; second, the average age of company engineering and management staff; and third, the reduced number of students in engineering faculties around the world. This paper aims to identify the critical factors underlying the trend of inadequate recruitment into higher education for mining and to examine means of alleviating the problem.

This paper is based upon surveys of potential and current students and graduate mining engineers from three mining schools. An attempt is made to understand institutional and industrial images, and career prospects and what is required to attract enough high-calibre young people into mining education over the next decade.

**GEOLOGY DIVISION/DIVISION DE LA GÉOLOGIE**  
14:30, ROOM 12, EDMONTON CONVENTION CENTRE  
**Recent Developments in Precious Metal Deposits of Western and Northern Canada, Part II**

REG OLSON and REX K. JOHNSON, Trigg, Woollett, Olson Consulting Ltd., Edmonton, Alberta, Session Chairmen

**Paper No. 105 — 14:30**

*The Golden Bear Mine: Geology, Mineralization and Development, British Columbia.*

J. FRANZEN, North American Metals Corp., Vancouver, British Columbia, and

H. WOBER, Chevron Resources Company, San Francisco, California, U.S.A.

The Golden Bear deposit is one of several important gold deposits and occurrences along a 20 km long fault system in northwestern British Columbia.

The deposits are hosted by Permo-Triassic mafic to intermediate tuffs which are in fault contact with dolomitized and silicified limestones from the basal part of the formation.

Gold mineralization is contained within a series of fault and fault breccia zones and is associated with disseminations and fracturing of fine-grained pyrite. Anomalous levels of arsenic and mercury accompany gold mineralization.

Commercial production is scheduled in 1988 at a forecast rate of 360 metric tonnes per day.

The recovery process includes dry grinding, whole ore roasting, cyanidation and CIP gold recovery. Average annual gold production is forecast at 64 000 oz.

**Paper No. 106 — 15:00**

*The Stonehouse Gold Mine, REG Property, Johnny Mountain, Iskut River Area, British Columbia.*

E.W. GROVE, E.W. Grove Consultants Ltd., Victoria, British Columbia

The REG property, owned 100% by Skyline Explorations Ltd., is located on the south side of the Iskut River at Johnny Mountain, in northwestern British Columbia. The REG property includes five separate major zones of gold-copper-silver and lead-zinc-copper-silver-gold mineralization. The Stonehouse Gold Mine has delineated mineral reserves of over 1 000 000 tons grading 0.730 oz/ton Au, 0.85 oz/ton Ag, 0.76% Cu, plus minor Pb and Zn. The estimated geological mineral potential of this deposit is 4 million tons grading 0.500 oz/ton Au (+ Ag), and 0.75% Cu.

En echelon auriferous sulphide rich veins have been developed over a strike length of 4750 ft to a drilled depth of 650 ft below surface. Underground development has shown that the veins are continuous, and detailed sampling has shown that the grades are significantly higher than indicated by the core drilling.

Country rocks comprise Triassic clastic, and volcanic rocks which are overlain unconformably by a thick sequence of gently dipping Jurassic volcanoclastic and volcanic strata. The syenite prophyry and country rocks, which host the gold deposit, show abundant evidence of periodic cataclastic deformation prior to late major east-west fracturing which formed channelways for further K feldspar alteration and subsequent sulphide rich material which formed the various vein systems. Visible native gold is common in all these veins and forms the main economic mineral.

Structural evidence, extensive K feldspar metasomatism and mineralogy suggest that the Stonehouse Gold Deposit represents a relatively high-temperature type of staged mineralization related to early Lower Jurassic syenitic plutonism.

**Paper No. 107 — 15:30**

*An Update from the Blackdome Mine, British Columbia.*

D. RENKIE, Blackdome Mining Corporation, Vancouver, British Columbia

The Blackdome gold-silver mine, located 250 km north of Vancouver, British Columbia, began production in May 1986. The ore deposits there are epithermal quartz vein stockworks emplaced along steeply dipping, northeasterly striking fault zones in Eocene volcanic rocks. The host rocks are relatively flat-lying rhyolitic to andesitic flows and tuffs which have been sheared, then hydrothermally altered and strongly silicified. Disseminations of fine- to medium-grained native gold, electrum, acanthite, agularite and silver sulphosalts constitute the economic minerals, and these occur with accessory pyrite, pyrrhotite, marcasite, digenite, chalcocopyrite, bornite, covellite, chalcocite, arsenopyrite, sphalerite and galena. Orebodies consist of small shoots in the order of 12 m to 70 m in strike length, measuring up to 75 m vertically and 1.5 m to 3.5 m thick.

To date, few structural, lithological or geochemical characteristics have emerged that act as dependable clues to locating ore. This, coupled with the small size of the ore shoot, makes exploration particularly difficult and expensive. However, reasonably reliable procedures have been developed over the years. Close-spaced geochemical soil sampling for gold, followed by extensive surface trenching is most effective for finding the shear zones which host the quartz veins. This is succeeded by methodical diamond drilling on 25 m centres

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420 - 111 Richmond Street West  
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Tel.: (416) 947-1087

**OVERVIEW**

Outstanding 5,283,968 shares

**EQUITY INTERESTS**  
January 7, 1988

No. Shares	Name Corporation	No. Issued	% Issued	Price**
971,600	T & H Resources Ltd.	3,584,565	27	\$2.50
854,700	Cane Corporation	4,022,580	21	0.50
687,492	Northway Explorations Limited	3,293,338	20	0.75
295,200	Gowest Amalgamated Resources Ltd.	3,181,001	9	0.30
538,500	Coastoro Resources Ltd.	3,087,895	17	1.20
128,334	x-Perrex Resources Inc.	8,085,429	2	0.90
320,000	x-Goldhunter Explorations Inc.	3,187,455	10	0.80
180,000	Sunburst Explorations Ltd.	5,825,650	3	0.25
x-Includes Warrants - **Current Market Value - \$4,500,000.00				

**JOINT - VENTURES**

Jonpol-Cominco Garrison Twp. On  
Jonpol-Coastoro Garrison Twp. On  
Jonpol-T & H Resources Garrison Twp. On  
Jonpol-Gowest Denton Twp. On  
Jonpol-Cane Vezza Twp. P.Q.  
Jonpol-Perrex Douay & Vezza Twp. P.Q.  
Jonpol-Noranda Restigouche County, N.B.  
Jonpol-Noranda Eagle Lake, On  
**DALQUIER TOWNSHIP, P.Q.**  
100% Interest in Silver, Zinc,  
Copper, Gold Prospect

**ROYALTY INTERESTS**

Lac Minerals Macassa Division  
5% Net Profit Interest 1 Claim  
Louvern Mines Ltd.  
.5% Gross Interest Chimo Mine  
Sunburst Explorations Ltd.  
.9% NSR Tribag Mine property  
Perrex-Ambie  
.5% NSR 41 claims Harker Twp.  
Perrex Resources Inc.  
.5% NSR 133 claims Harker Twp.  
Northway Explorations Ltd.  
9% NSR 108 claims Noyon Twp.

**DIAMOND DRILLING IN PROGRESS**

Jonpol-Cominco Garrison Twp. On  
Jonpol-T & H-Coastoro, Garrison Twp. On

**CANADIAN EXPLORATION FUNDS**

In Place	
CMP	1987 \$100,000
Mintax	1987 240,000
Middlefield	1987 400,000
NIM	1988 1,250,000
Total	\$1,990,000

# Program

along strike to develop drifting targets.

At start-up, reserves in all categories were 185 000 t grading 27.23 g Au/t and 129.75 g Ag/t. From that time to June 30, 1987, the mine operated continuously, yielding 2145.5 kg (56 760 oz) of gold and 5079.3 kg (134 372 oz) of silver. Property exploration kept pace such that at June 30, reserves were 254 527 t grading 25.47 g Au/t and 82.54 g Ag/t. An aggressive exploration program is recognized as vital to the continuing success of the mine, and a significant portion of the mine's operating budget is allocated each year for this purpose.

## Paper No. 108 — 16:00

*Geology and Mineralization of the Sulphurets Property, British Columbia.*

F.G. HEWETT, T.J. DROWN and K.E. HICKS, Newhawk Gold Mines Ltd. (N.P.L.), Vancouver, British Columbia

The Sulphurets precious metal deposits are located 65 km northwest of Stewart in northwestern British Columbia. Mineralization is hosted in quartz veins and stockworks within altered volcanic and sedimentary rocks of the Hazelton Group.

A major exploration program is currently being conducted in the Brucejack Area, where exploration to January 1988 comprised over 110 000 ft of diamond drilling and 2600 ft of underground development. Geological reserves published as at January 1987 were 1 584 145 tons grading 0.336 oz/ton gold and 22.86 oz/ton silver.

## Paper No. 109 — 16:30

*Nickel Plate, British Columbia — Geology and Operations.*

R.G. SIMPSON, Mascot Gold Mines Limited, Vancouver, British Columbia

The Nickel Plate Mine is a gold-bearing skarn deposit located in southern British Columbia, 225 km east of Vancouver. The deposit is currently being mined as an open pit operation by Mascot Gold Mines Limited at a rate of 2450 t/day and is the largest producing gold mine in the province. Ultimate pit reserves are 9 million tonnes grading 4.6 g Au/t. Structurally controlled, gold-bearing sulphide zones lie near the outer margins of a large, pyroxene-garnet skarn zone developed in calcareous sedimentary rocks of the Upper Triassic Nicola Group. A quartz diorite-gabbro stock of lower Jurassic age located west of the minesite is believed to be responsible for the skarn alteration and mineralization.

## Paper No. 110 — 17:00

*Gold, the Sicker Group and the Debbie Property, Port Alberni, Vancouver Island, British Columbia.*

R.R. WALKER, J.J. WATKINS and E. LYONS, Westmin Resources Limited, Vancouver, British Columbia

The Debbie Property, 10 km east of Port Alberni, British Columbia, is underlain by a metavolcanic belt of the Paleozoic Sicker Group. Current exploration centres on gold occurrences in various rocks including altered basalt, bedded chert, and epigenetic quartz veins. Three principal gold zones and a few other occurrences have been explored by approximately 42 000 m of diamond drilling in the past one and a half years.

The volcanic stratigraphy includes various mafic and felsic, volcanics, volcanoclastics and cherty chemical sediments and is prospective for volcanogenic massive sulphide deposits such as at Buttle Lake. Stratigraphic correlation with the Buttle Lake mining camp indicates the Debbie Property rocks are part of the Myra Formation and are probably Devonian in age.

## JOINT SESSION: MAINTENANCE/ENGINEERING AND METAL MINING DIVISIONS/SÉANCE CONJOINTE: DIVISION DE L'INGÉNIERIE/ENTRETIEN ET DIVISION DE L'EXPLOITATION DES MINES DE MÉTAUX

14:30, ROOM 10, EDMONTON CONVENTION CENTRE  
**Mining Equipment Technology**

B.J. CLAUZIER, Chief Electrical Systems Engineer, Falconbridge Limited, Falconbridge, Ontario, and DON MacLEAN, MacLean Engineering and Marketing, Collingwood, Ontario, Session Chairmen

## Paper No. 111 — 14:30

*Light at the End of the Tunnel.*

J. SAWICZ, Falconbridge Limited, Falconbridge, Ontario

Increasingly the availability of good lighting systems underground is gaining importance and attracting the attention of people in the union, company and government sectors. In fact, in 1988, the government is proposing to set guidelines to assure adequate light levels and systems are available to the workers underground.

In an attempt to determine if Falconbridge's present caplamp system, or if the new Northern Light caplamp system, would meet the pending light level standards, a six-month investigation was carried out at Strathcona Mine.

The testing was carried out on three different caplamp types as well as a number of substitute bulbs for those caplamps. Included in the report are the findings on four makes of hand-held spotlamps tested at the same time.

## Paper No. 112 — 15:00

*Repair and Reclamation Technology of Cast Iron Mining Equipment.*

R.S. CHANDEL, CANMET, and R. DAWSON, Delero Stellite

For the past several years, CANMET has been actively involved in the development of technology for the reclamation and repairing of failed and/or worn engineering components. On behalf of CANMET, a survey was conducted initially and the results showed that there was a great need and potential for repair technology, particularly in the mining industry. Subsequently, a project was designed to carry out an investigation on the technical aspects of the repairing of cast irons.

The main objective of the project was to evaluate the process and procedures for the repairing of worn or failed grey cast iron mining equipment components. The work was performed in two phases. The first phase was devoted to the techno-economic aspects of repairing while the second phase was concerned mainly with the scientific and technical assessment of the various processes, consumables and evaluation of welding procedures for field repair.

This paper will discuss the methodology developed for the repairing of the failed cast iron mining equipment. An attempt will also be made to show that a systematic and scientific method can be used for repair welding.

## Paper No. 113 — 15:30

*First Underground Trackless Electric Haulage System — Hoyle Pond.*

BILL FLANAGAN, Kidd Creek Mines Limited

The underground operation at Hoyle Pond Mine has been developed using a 17% declining ramp. Mine production is currently scheduled at 96 000 tonnes per year. To remove this amount of material from underground, the Wagner Electric Truck and Trolley System is being used.

This paper will outline the reasons why it was decided to employ the electric truck as a haulage unit, the selection of the type of electric haulage, the installation of the system and the developments that have been made, operation and production capacity.



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