



EXPLORATION AND MINING **in British Columbia 2002**



**BRITISH
COLUMBIA**

**Ministry of Energy and Mines
Resource Development Division
Mines Branch**

FOREWORD

The year 2002 was another challenging one for the mineral exploration industry in British Columbia. Companies continued to experience difficulty in securing financing for projects and prices for most metals remained depressed. Gold was one bright spot. The price of the yellow precious metal rose steadily from just below US\$280 at the beginning of the year to almost US\$350 by the end of 2002, and surged even higher in early 2003. Deposits containing gold, and gold in combination with other metals, were the target of a majority of exploration projects. This renewed interest in gold helped spur exploration spending in the province to near the \$40 million, up by about \$10 million over 2001, and the third successive increase in annual exploration spending since the all-time low set in 1999.

In 2002 there were 75 exploration projects with expenditures in excess of \$100 000 in the province, up from 58 in 2001. The number of mineral claims recorded in British Columbia during the year was 27 542, an increase of 6% over 2001; the number forfeited was 21 012, down from 24 228 in 2001. The number of Free Miners Certificates increased 7% to 4375 in 2002. Total 2002 drilling in British Columbia on more than 90 projects is estimated to total 215 000 metres. Of this, 160 500 were on metals projects, 44 000 on coal projects (down sharply from 2001), and 10 500 on industrial minerals projects.

Noteworthy new discoveries were made in the province. Roca Mines Inc. located a stratabound mineralized zone on their Foremore property in the Iskut district which may be the source of polymetallic boulders that attracted explorers to the area. Barrick Gold Corporation found a wide zone of gold mineralization in the 22 Zone, 1.5 kilometres south of the Eskay Creek mine. Also in the Eskay Creek camp, Heritage Resources assembled a significant land position, completed a comprehensive digital compilation of historical data for the area, and followed it up with a successful drill program. Drilling by Northgate Exploration Inc. tested the Nugget Zone, approximately 1 kilometre west of the Kemess North deposit. The drilling intersected porphyry gold-copper mineralization similar in nature to the Kemess North deposit. While carrying out fieldwork, a British Columbia Geological Survey mapping crew discovered the Joss' alun high-grade copper sulphide prospect southeast of Atlin. After the discovery was announced, several companies acquired claims in the area. Late in the year Chapleau Resources Ltd. assembled a large land position to cover many gold prospects in the Cranbrook area. Initial drilling on their Bar gold project intersected significant gold mineralization in an area of historical trenching that had not been previously drill-tested.

Important exploration programs continued on a number of advanced level projects. Sultan Minerals Inc. further explored their Kena intrusion-related gold project near Nelson and in the fall, concluded an option agreement on the project with Kinross Gold Corporation. Another high-profile acquisition by a major was Noranda's option from Seabridge Resources Inc. of the Kerr-Sulphside porphyry Cu-Au project in the Iskut district. The largest exploration program in the province was carried out by Northgate Exploration Inc. on its Kemess North porphyry Cu-Au deposit. A large drill program was carried out by DRC Resources Inc. on their Afton porphyry Cu-Au-Ag-Pd project. They traced mineralization to the southwest of the past-producing pit area. After infill and geotechnical drilling on the southeast zone, Doublestar Resources Ltd, in partnership with Northgate Exploration Ltd. and Procon Mining and Tunnelling Ltd, undertook a feasibility study of the Sustut volcanic redbed copper project, approximately 65 kilometres south of the Kemess South mine. International Wayside Gold Mines Ltd. continued to explore the Cariboo Gold Quartz property in the Wells-Barkerville camp, focusing on mesothermal vein and pyrite replacement-style mineralization at both the Bonanza Ledge Zone and on the adjacent Myrtle property. In mid-December Redfern Resources Ltd. received a Project Approval Certificate for the underground development of its Tulsequah Chief polymetallic massive sulphide deposit, located southwest of Atlin, and for construction of a 162-kilometre access road. In the Harrison Lake area Leader Mining International Inc. carried out a definition drill program and accelerated its feasibility study of the Cogburn magnesium metal project.

At year-end there were six operating metal mines, seven operating coal mines, and approximately forty active industrial mineral operations in British Columbia. The value of solid mineral production in the province is estimated to be \$2.84 billion for 2002, a decrease of 5% from 2001 levels. The most valuable commodities were metallurgical coal (36%), copper (21.3%), structural materials (17%), gold (11.2%), silver (5.3%), molybdenum (2.9%), and zinc (2.4%). Industrial minerals, lead, thermal coal and other commodities each contributed less than 2%. The Myra Falls Cu-Zn-Pb-Ag-Au mine on Vancouver Island, operated by Boliden-Westmin (Canada) Ltd., reopened in March after a four-month shutdown. Subsequently, the mine increased gold and silver production and reduced operating costs. The Eskay Creek Au-Ag mine in the Iskut River area increased production slightly in 2002 to offset the effects of mining lower grade material. The Kemess South Cu-Au mine improved its operating efficiency by increasing production and attaining higher gold and copper recoveries. At the Huckleberry porphyry Cu deposit, mining of the main pit was completed and expansion of the east pit initiated. The Endako porphyry Mo mine benefited from higher prices for molybdenum in 2002. The Highland Valley Copper mine southwest of Kamloops confirmed plans to maintain production until 2009.

Coal exploration expenditures were down sharply in 2002. The Fording Canadian Coal Trust a new investment vehicle will combine all the metallurgical coal assets of Fording, Luscar, and TeckCominco (all the Elk Valley mines) as well as the export terminals owned by Luscar and Westshore Terminals.

Exploratory drilling for coal bed methane was carried out in the Peace River coalfield and interior basins.

As a result of reorganization and downsizing, staff in the Ministry of Energy and Mines regional offices in Cranbrook, Kamloops, Prince George, and Smithers will be reduced; the Nanaimo office will be closed. Jacques Houle is now returning to the exploration sector, after spending the last three years as the Regional Geologist for the Southwest Region based in Nanaimo. We wish him well. Jacques has done an excellent job of promoting mineral exploration in the Southwest Region, has taken on the task of overseeing the publication of this volume for the past two years, and was responsible for setting up the Vancouver Island Exploration (VIX) Group, based in Nanaimo.

The year 2003 has begun with a progressive strengthening of the gold price and prices of other metals are beginning to inch up. Early indications are that the ability of exploration companies to raise money to finance projects has improved. These factors, combined with positive key exploration indicators for the province, bode well for the mineral industry's prospects in the year ahead.

Part A of this publication contains summary papers of exploration and mining highlights for each of the five regions and are authored by the Regional Geologists in Nanaimo, Kamloops, Cranbrook, Prince George and Smithers. Part B comprises papers authored by a combination of government and industry geoscientists which focus on specific projects. Once again thanks are extended to Bill McMillan of Victoria who critically reviewed all the papers, and to Janet Holland of the Geological Survey who handled the desktop publishing of the volume.

*David A. Terry, PhD, PGeo.
Regional Geologist, Cranbrook*

TABLE OF CONTENTS

FOREWORD	iii	Conclusion	27
PART A		Outlook for 2003	28
OVERVIEW OF EXPLORATION		Acknowledgements	28
ACTIVITY		References	28
NORTHWEST BRITISH COLUMBIA		SOUTHWEST REGION	
Summary	1	Summary	29
Metal Mines	3	Exploration Trends	29
Mineral Exploration	6	Mines And Quarries	31
Smithers-Houston-Babine Area	6	Myra Falls Operation	31
Terrace-Kitimat Area	6	Quinsam Coal Mine	33
Stewart District	7	Limestone Quarries	33
Iskut District	8	Industrial Mineral Quarries	34
Turnagain-Stikine Area	9	Dimension Stone Quarries	34
Cassiar Area	10	Exploration Activity	35
Atlin Area	10	Vancouver Island	35
Industrial Minerals and Gemstones	11	Harrison Lake - Hope Area	37
Placer Mining	11	Coastal Mainland Area	38
Coal and Energy Projects	11	Acknowledgements	39
Acknowledgements	11	SOUTH-CENTRAL REGION	
NORTHEAST-CENTRAL		Highlights	41
BRITISH COLUMBIA		Exploration Trends	41
Summary	13	Mines and Quarries	42
Metal Mines	13	Development Projects	46
Kemess South	13	Exploration Projects	47
Other Mines	13	Porphyry and Related Targets	47
Coal Mines	13	Acknowledgements	49
Bullmoose	13	KOOTENAY REGION	
Willow Creek	15	Summary	51
Industrial Mineral Mines	15	Exploration Highlights	52
Exploration Trends	15	Metals	53
Exploration Summary	16	Industrial Minerals	59
Toodoggone Camp	16	Coal	60
Omineca Mountains	18	Producing Mines and Quarries	60
Rocky Mountain Foothills	21	Metals	60
Peace River Coal Fields	21	Industrial Minerals	60
Nechako Plateau	22	Coal	62
Cariboo – Wells-Barkerville Area	23	Acknowledgements	62
Cariboo - Likely And Horsefly Areas	24	Ni-Cu-PGE Deposits in the Pacific Nickel	
Placer Mining and Exploration Highlights	25	Complex, Southwestern BC	
By Ken MacDonald, PGeo	25	Abstract	65
Introduction	25	Introduction	65
Trends	25	Previous Work	67
Principal Areas of Activity	26	Tectonic Setting	67
Reclamation	27	Metamorphism	67

Field Relations and Timing of the Pacific Nickel Complex And Spuzzum Intrusion	68
K-Ar data from the vicinity of the Giant Mascot mine	68
Field Relations at Sable	70
Petrography.	73
Whole Rock Chemical Composition and Petrogenetic Constraints	74
Discussion	76
Conclusion	77
Acknowledgements	78
References	78

Aluminous Alteration at the Briton Hematite Prospect, Chilcotin Ranges

Introduction	81
Location, Access and Claim Ownership	81
Exploration History	83
Regional Geology	83
Local Geology	83
Mineralization And Alteration.	83
Regional Stream Geochemistry	84
Discussion and Conclusions.	85
Acknowledgements	85
References	85

PART A

**REVIEW OF EXPLORATION
AND MINING ACTIVITY**

PART B

