MINERAL INDUSTRY

Yukon mining and exploration overview, 2000

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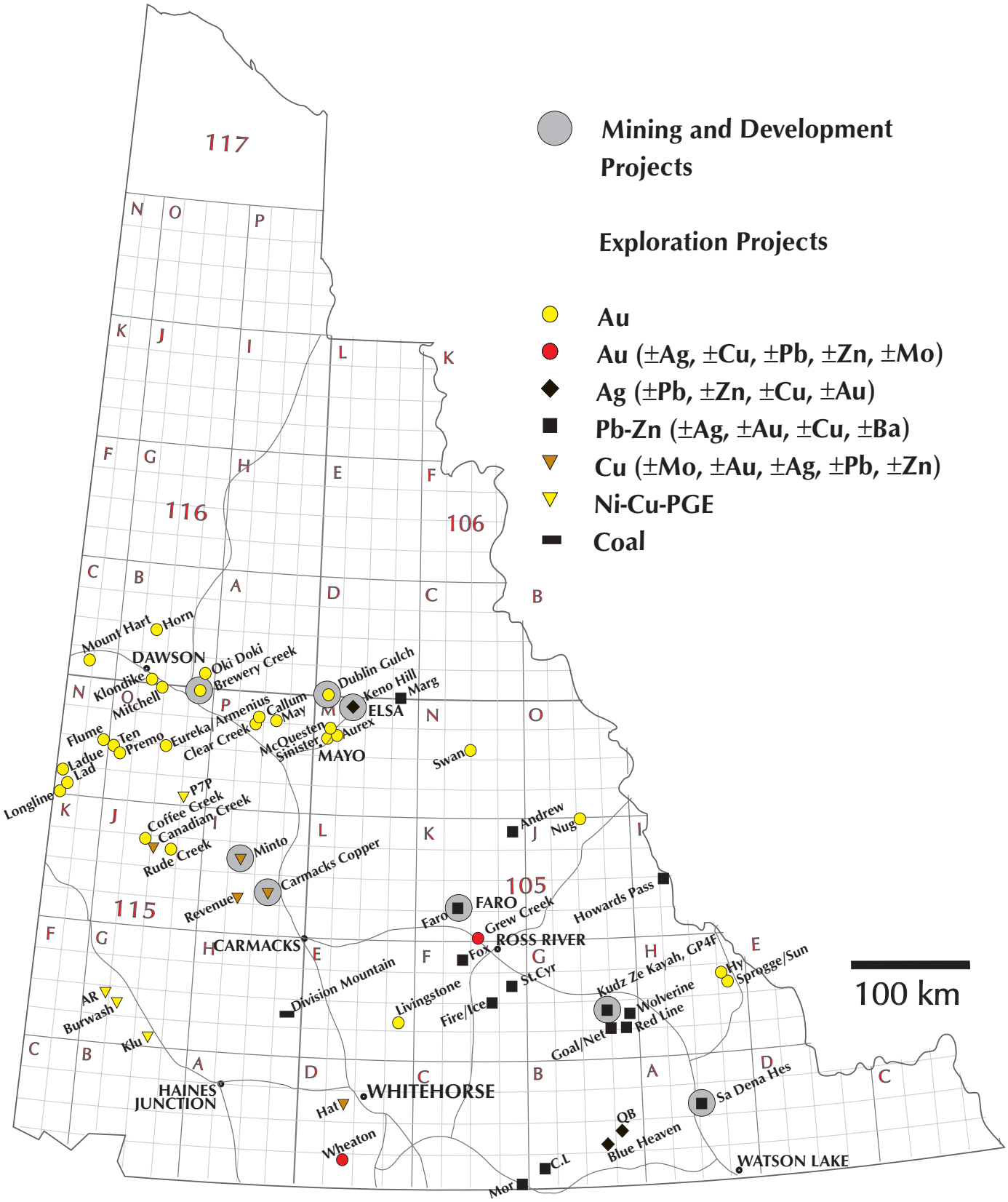

Figure 1. *Location of active Yukon mines, development and exploration projects in 2000. Not all projects are shown on the map. Background of the map shows the National Topographic System (NTS) grid.*

YUKON MINING AND EXPLORATION OVERVIEW, 2000

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RÉSUMÉ

Au Yukon, la production minérale s'est poursuivie à la mine d'or Brewery Creek de la Viceroy Resource Corporation, située à l'est de Dawson City. La mine d'or Brewery Creek avait produit 39 936 onces (1 024 408 grammes) d'or à la fin du troisième trimestre 2000 à un coût d'exploitation de 250 $US l'once. La production pour l'année devrait être de l'ordre de 50 000 onces (1 555 150 grams) d'or. La Minto Exploration a poursuivi la mise en œuvre de son projet Minto de mine de cuivre, d'or et d'argent. Le projet est entièrement approuvé, et les étapes du financement et de la mise en production pourrait être franchies dans un an.

Les travaux d'exploration minérale dans le territoire ont portés sur une vaste gamme de cibles pour les métaux communs et précieux; plusieurs projets ayant produit des résultats importants. Les dépenses d'exploration pour 2000 sont évaluées à 8,8 millions $C, en baisse par rapport aux 9,5 millions dépensés en 1999. La faiblesse des prix des métaux et l'absence de participation d'intérêts spéculatifs dans le secteur minier secondaire sont les principaux facteurs responsables de cette baisse. Les nouvelles découvertes peuvent aussi entraîner une hausse des dépenses. Ce fut le cas récemment, lorsque les dépenses d'exploration ont atteints les 54 millions $C en 1996, suite à la découverte du gisement de sulfures massifs volcanogéniques (SMV) de Kudz Ze Kayah par la Cominco Ltd. Une autre découverte semblable pourrait survenir au Yukon où plusieurs projets d'exploration ont produits des résultats de forage concluants. Toutefois, la difficulté de réunir les capitaux requis a fait dérapé cette ruée potentielle. Au total, 2379 claims ont été jalonnés dans l'an 2000, et le nombre de claims en règle avait chuté à 56 240, une baisse importante par rapport à l'année précédente.

En l'an 2000, l'exploration minérale a porté tant sur les métaux communs que précieux. Les travaux d'exploration pour l'or ont encore portés essentiellement sur les gisements d'or associés aux intrusifs de la « ceinture aurifère de Tintina ». Les forages au diamant ont porté sur des filons à forte teneur et des cibles à fort tonnage sur les propriétés suivantes : propriété Longline sur la frontière Yukon-Alaska dans le centre du Yukon, skarn à forte teneur sur la propriété Horn près de Dawson, zone bréchique quartzifère dans le skarn de Clear Creek et zones de substitution à McQuesten, près de Keno Hill, et zones de substitution et structurales sur la propriété Sun/Sprogge dans le sud-est du Yukon. Les résultats des forages ont été concluants sur plusieurs propriétés. L'exploration pour les

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éléments du groupe du platine (EGP) fut surtout concentrée dans la zone ultramafique de Kluane, dans le sud-ouest du Yukon. Les programmes menés dans cette zone visaient à préciser des cibles de forage pour 2001. Plusieurs autres projets de reconnaissance ont aussi été réalisés dans d'autres régions du Yukon qui sont promettrices pour les EGP.

L'exploration pour les métaux communs a surtout porté sur des gisements de SMV. L'acquisition du gisement de Kudz Ze Kayah par Expatriate Resources Ltd., qui détient déjà le gisement de Wolverine, a relancé les activités d'exploration dans la région de Finlayson Lake et une étude de faisabilité concluante a permis de progresser vers l'étape de la mise en valeur. La prospection dans les autres régions de SMV prometteuses a produit des résultats fort encourageants, notamment sur la propriété *'Fire and Ice'* dans la zone volcanique des monts Pelly et sur la propriété Mor dans le terrane Yukon-Tanana dans le sud du Yukon. La Copper Ridge Exploration a mené un vaste programme sur le gisement sédimentaire exhalatif de Howards Pass dans l'est du Yukon. Le programme visait surtout à évaluer les possibilités hydrométallurgiques et de nouveaux scénarios énergétiques (gaz naturel), qui permettraient de réduire considérablement les coûts d'immobilisation et d'exploitation. Le gisement d'Howards Pass est le plus gros dans le nord de la Cordillère canadienne; il renferme une des plus fortes concentrations de corps stratiformes de zinc et plomb, logés dans des sédiments, dans le monde. L'exploration a aussi porté sur la recherche de gisements de cuivre et or porphyriques dans le chaînon de Dawson et de la ceinture cuprifère de Whitehorse, un type de cible qui n'a pas suscité beaucoup d'intérêt au Yukon ces dernières années.

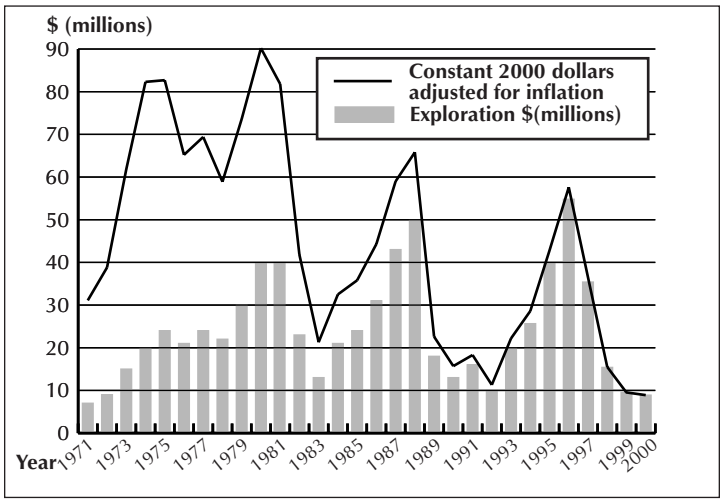

Figure 2. *Yukon exploration expenditures: 1971-2000.*

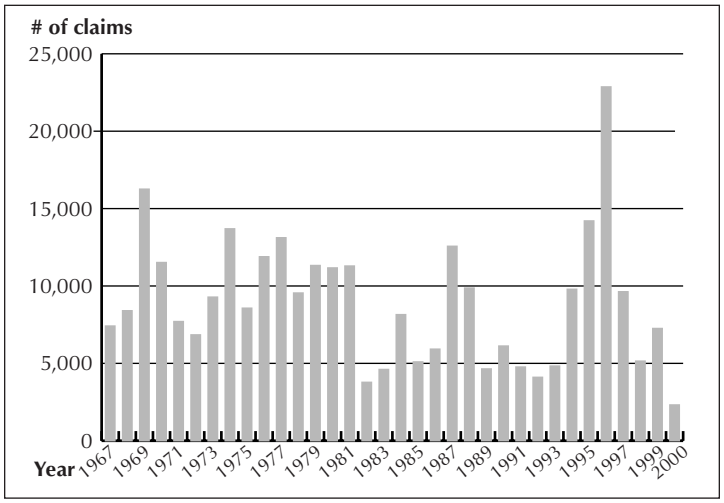

Figure 3. *Quartz claims staked: 1967-2000.*

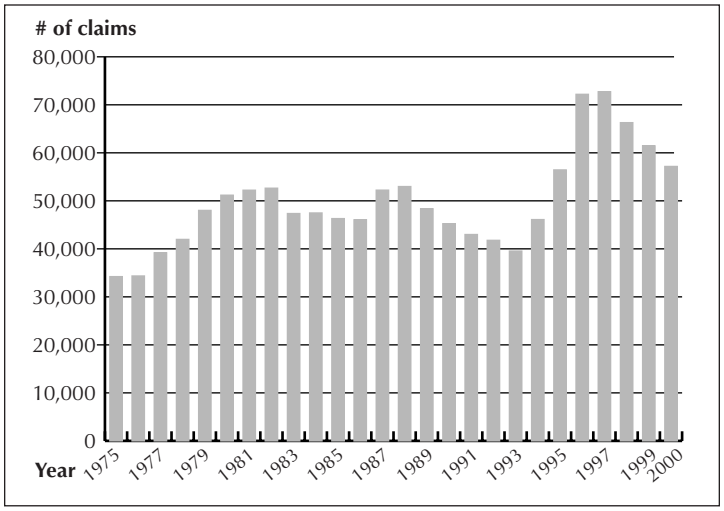

Figure 4. *Quartz claims in good standing: 1975-2000.*

INTRODUCTION

Mineral production in the Yukon continued at Viceroy Resource Corporation's Brewery Creek gold mine located east of Dawson City. The Brewery Creek mine produced 32,936 ounces (1,024,408 grams) of gold to the end of the third quarter of 2000 at a cash operating cost of US$250 per ounce. Production for the year is projected to be in the range of 50,000 ounces (1,555,150 grams) of gold. Minto Exploration continued with development of the Minto copper-gold-silver project. The project is fully permitted, and with financing could be completed and in production in one year.

Mineral exploration in the Territory was directed at a wide range of base and precious metal targets with several projects (Fig. 1) producing significant results. Exploration expenditures for 2000 are estimated to be $8.8 million, down from $9.5 million spent in 1999 (Fig. 2). Poor commodity prices and the lack of speculative investors participating in the junior mining sector are the main contributors to this decrease. An increase in exploration can be fueled by new discoveries. A recent example of this is the peak in exploration expenditures of $54 million spent in 1996 following Cominco Ltd.'s discovery of the Kudz Ze Kayah volcanogenic massive sulphide (VMS) deposit. The Yukon may be on the brink of another such discovery with several exploration projects returning significant drilling results. However, the difficulty in raising capital has transformed this potential rush into a crawl. A total of 2379 claims were staked in the year 2000 (Fig. 3), and claims in good standing had dropped to 56,240 (Fig. 4), a significant decrease from the previous year.

In an effort to bolster declining exploration expenditures and demonstrate its commitment to the mineral industry, the new Yukon government increased funding to the Yukon Mining Incentive Program by $250,000 to $628,000. The government also increased the Yukon Mineral Exploration Tax Credit from 22% to 25%, effective April 1, 2001 and extended the eligibility period to March 31, 2002.

Exploration in 2000 was divided equally between the search for base and precious metals. Gold exploration was once again dominated by the search for intrusion-related gold deposits within the Tintina gold belt. Targets diamond drilled at the following properties included: high-grade veins and bulk tonnage targets at the Longline property on the Yukon-Alaska border in central Yukon, high-grade skarn at the Horn property near Dawson, a quartz-breccia zone at Clear Creek, skarn and replacement zones at McQuesten, near Keno Hill, and replacement and structural zones on the Sun/Sprogge property in southeastern Yukon. Significant results from drilling were obtained on several of the properties. Exploration for platinum group elements (PGE) was conducted mainly in the Kluane ultramafic belt. Programs in the belt were directed at refining drilling targets for the 2001 exploration season. Several other reconnaissance projects were also directed at other PGE-prospective areas in Yukon.

Base metal exploration was dominated by the search for volcanogenic massive sulphide (VMS) deposits. The consolidation of the Kudz Ze Kayah and Wolverine deposits by Expatriate Resources rekindled exploration in the Finlayson Lake district and has significantly advanced the projects towards development with a positive pre-feasibility study. Exploration in other prospective VMS districts, including the Fire and Ice property in the Pelly Mountains volcanic belt and the Mor property in

Yukon-Tanana Terrane in southern Yukon, generated exciting results. Copper Ridge Exploration conducted a major program at the Howards Pass sedimentary-exhalative deposit in eastern Yukon. The main focus of the program was to test for open-pit potential and to evaluate hydrometallurgy and new power options (natural gas), which have the potential to reduce capital and operating costs significantly. Howards Pass is the largest deposit in the northern Canadian Cordillera, which contains one of the world's largest concentrations of sediment-hosted stratiform zinc-lead mineralization. Porphyry copper-gold deposits, which have not received much attention in the Yukon in recent years, were also subject to exploration in the Dawson Range and in the Whitehorse Copper Belt.

MINING AND DEVELOPMENT

Viceroy Resource Corporation's **Brewery Creek gold mine** (Yukon MINFILE, 1997, 116B 160) was Yukon's only active hard-rock mine in 2000. The mine is a bulk tonnage, heap leach operation located 57 km east of Dawson City. Intrusive-related gold mineralization is hosted by intrusions of the mid-Cretaceous Tombstone Plutonic Suite, and Silurian to Carboniferous clastic metasedimentary rocks of the Steel Formation and the Earn Group. Production to the end of September yielded 32,936 ounces (1,024,408 grams) of gold at a cash operating cost of US$250 per ounce. Mining operations removed a total of 3.291 million tonnes of material, including 1.68 million tonnes of ore from four open pits: Blue, Lucky, Pacific and Moosehead (Fig. 5). A total of 1.933 million tonnes of ore was delivered to the heap leach pad, grading 1.72 g/t Au. Recoveries in the ore currently being mined

Figure 5. *Mining operations at the Moosehead open-pit. Brewery Creek produced ore from four open pits in 2000.*

are estimated at 65% based on experience from 1999 when the mine produced 48,164 ounces (1,498,045 grams) of gold, a 35% production shortfall. Lower recoveries are a result of mining deeper ore in the transitional (oxide to sulphide) zone and from lower than expected recoveries in higher grade sedimentary ores. Total production for 2000 is projected to be 50,000 ounces (1,555,150 grams) of gold at a cash operating cost of US$245 per ounce. Reserves as of December 31, 1999 were 3.1 million tonnes grading 1.59 g/t Au calculated at a US$300 gold price. The heap leach pad, before the onset of mining in 2000, had 3.5 million tonnes of capacity, which was sufficient for two years of production.

Figure 6. *Mine development at the Minto project included completion of the 54-person camp and kitchen/diner/change-house complex.*

Mine development expenditures were approximately $550,000 in 2000. Viceroy Resource Corporation expended $200,000 on solution handling and water-treatment facilities at the Brewery Creek gold mine. Minto Explorations Ltd. incurred the remainder of the mine development expenditures at the **Minto Cu-Au-Ag** project (Yukon MINFILE, 1997, 115I 021, 022). Development at Minto included roadwork, equipment purchases, and completion of the 54-person camp and kitchen/diner/change-house complex (Fig. 6). The proposed mine is located 240 km northwest of Whitehorse and will be developed as a conventional open pit mine and milling operation. The deposit has a mineable reserve of 6.51 million tonnes grading 2.13% Cu, 0.62 g/t Au, 9.3 g/t Ag at a 4.9:1 strip ratio. In 1996, the company concluded a mining venture agreement with ASARCO Inc. (a subsidiary of Grupo Mexico), under which ASARCO can acquire a 70% interest in the project in consideration for providing up to US$25 million for development of the project. The project is fully permitted and, contingent on funding, could be in production within one year.

BASE METALS EXPLORATION

Exploration for base metals focussed mainly on volcanogenic massive sulphide (VMS) targets in various geological settings throughout the Yukon. Other deposit types sought included sedimentary-exhalative targets in Selwyn Basin, carbonate-replacement targets in the Rancheria Ag-Pb district, and Cu-Au porphyry targets in the Dawson Range and Whitehorse Copper Belt.

Expatriate Resources has a purchase agreement with Cominco to acquire the **Kudz Ze Kayah** (Yukon MINFILE, 1997, 105G 117) and **GP4F** VMS deposits (Fig. 7), as well as 2800 surrounding mineral claims in the Finlayson Lake VMS district; this is known as the Finlayson Project. Hatch Associates Ltd. completed a pre-feasibility study for Expatriate Resources on the Finlayson Project, which

Figure 7. *Rob Duncan (left) and Terry Tucker (kneeling) of Expatriate Resources examine core from the GP4F deposit stored at the KZK camp.*

Figure 8. *Terry Tucker of Expatriate Resources gives Ken Kagiyama of Dowa Mining Co. Ltd. and Julie Hunt of the Yukon Geology Program an overview of the proposed development plans at the Wolverine project.*

combines probable reserves from the Kudz Ze Kayah (100% Expatriate) and the **Wolverine** (60% Expatriate, 40% Atna Resources Ltd.; Yukon MINFILE, 1997, 105G 072) deposits. Probable reserves used in the study total 14.57 million tonnes grading 7.23% Zn, 1.53% Pb, 0.97% Cu, 184.5 g/t Ag and 1.39 g/t Au. The study indicates, on a 100% equity-financing basis, that the base-case discounted cash flow analysis of the project yields a pretax internal rate of return (IRR) of 39.2% and an after-tax IRR of 31.9%. The project net present value at a 10% discount rate is $255 million pretax and $163 million after tax. The Finlayson project has a payback for the capital cost of two years from the start of production. Capital costs are estimated at $186.5 million with a 15% contingency. Metal prices used in the analysis were US$0.55 per pound zinc, US$0.20 per pound lead, US$0.90 per pound copper, US$5.00 per ounce silver, US$275 per ounce gold with an exchange rate of C$1.00 = US$0.68.

The production plan for the Finlayson Project consists of an open pit at Kudz Ze Kayah producing 3000 tonnes per day, and an underground operation at Wolverine producing 1250 tonnes per day (Fig. 8). The ores will be blended and processed at a 4250 tonne per day facility located at Kudz Ze Kayah. The blending of Kudz Ze Kayah ore and the high-selenium Wolverine ore produces a concentrate that dilutes the selenium content to acceptable levels. Several smelter operators have provided letters of interest for the concentrate products and have provided smelter terms used in the pre-feasibility study.

Expatriate completed seven drill holes in the Lynx zone of the Wolverine deposit along the proposed path of an underground drift, which will be included as part of the feasibility study proposed for 2001. Overall, recent drilling confirmed a previous interpretation of the deposit based on wider spaced drilling conducted in earlier programs. Drilling from the 2000 exploration program will provide detailed information for test mining that is planned as part of the feasibility study.

Exploration potential in the Finlayson Project is considered to be very high. All of the main deposit areas, Wolverine, Kudz Ze Kayah, and GP4F, are open to expansion and additional drilling can upgrade resources in the deposits to the reserve base. The first priority for Expatriate Resources upon acquiring the WOL claims from Cominco was to test the down-dip extension of the Wolverine deposit (see also Bradshaw et al., and Piercey et al., this volume). The Wolverine deposit is open down-dip for 800 m along the WOL claim boundary. The first hole drilled on

the WOL claims, WW00-01, intersected a true thickness of 7.4 m of 13.56% Zn, 1.16% Pb, 0.68% Cu, 152 g/t Ag and 0.59 g/t Au (Fig. 9); hole WW00-01 is located approximately 100 m down dip from drill hole WV96-64. The second hole drilled on the WOL claims did not deviate as expected and intersected the Wolverine horizon approximately 300 m down dip from hole WW00-01. Hole WW00-02 intersected a weakly mineralized graphitic argillite overlain by a calcite-pyrite exhalite unit. Hole WW00-03 was drilled approximately 100 m northeast of hole WW00-01 and intersected a true thickness of 1.4 m of massive sulphide mineralization and 1.1 m of copper-rich stringer zone mineralization. The entire interval returned 2.5 m grading 8.33% Zn, 1.32% Pb, 1.55% Cu, 293 g/t Ag and 1.17 g/t Au. Additional drilling is required to fully test the down-dip potential of the Wolverine deposit on the WOL claims. Expatriate also conducted University of Toronto electromagnetic (UTEM) and magnetometer surveys in the area of the Kudz Ze Kayah deposit and Fault Creek zone to better define targets in that area.

Figure 9. *Close-up of massive sulphide intersection from drill hole WW00-01 on the Wolverine project (NQ core). The hole intersected 7.4 m of 13.56% Zn, 1.16% Pb, 0.68% Cu, 152 g/t Ag and 0.59 g/t Au.*

Expatriate began compilation of the large amount of data acquired from Cominco and integrated it with existing data on their wholly owned claims, as well as data from the Expatriate/Atna joint venture. The database covering the Finlayson district will be used to prioritize the numerous targets within a large tract of land, which covers over 1700 km^2 of claims.

The **Goal/Net** property of Expatriate is located 6 km south of the GP4F deposit and is interpreted to occur at the same stratigraphic horizon. Four drill holes, totalling 500 m, were drilled (Fig. 10) in an area of strong multi-element soil geochemistry and induced polarization (IP) chargeability anomalies. Drilling intersected 0.73 m of semi-massive sulphides assaying 3.0% Zn, 1.85% Pb, 0.14% Cu, 63 g/t Ag and 0.2 g/t Au in hole GN00-02 within a quartz-porphyry rhyolite. Additional UTEM geophysical surveys were conducted, which identified a shallow, weak conductor. Follow-up drilling on the conductor included hole GN00-03, which failed to reach bedrock, and hole GN00-04, which intersected 0.3 m of semi-massive sulphides assaying 3.0% Zn, 0.7% Pb, 0.08% Cu and 9.4 g/t Ag. The mineralization is characterized by very low levels of selenium similar to the GP4F deposit. Additional drilling will be conducted in 2001 to test this new mineralized horizon.

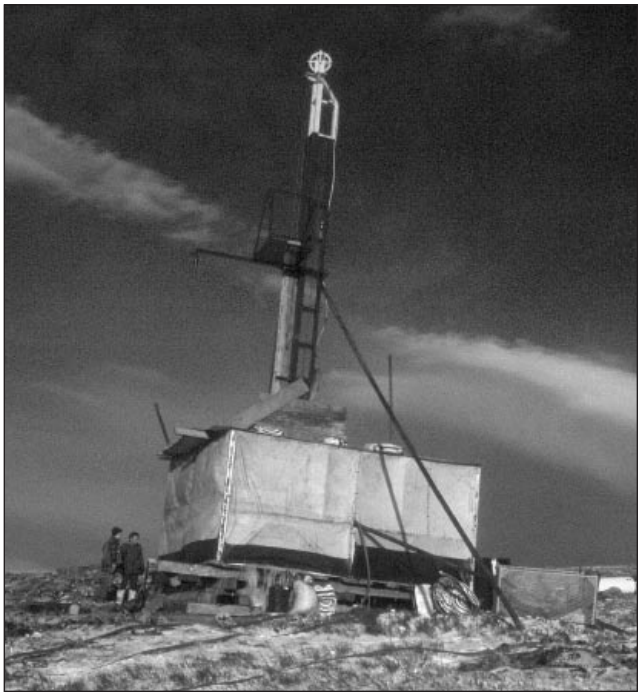

Figure 10. *Drilling on the Goal/Net property intersected semi-massive sulphide mineralization.*

Eagle Plains Resources Ltd. conducted a reconnaissance program in the northern portion of the Pelly Mountains

Figure 11. *Eagle Plains Resources conducted helicopter-supported diamond drilling on the Fire property in the Pelly Mountains volcanic belt.*

volcanic belt, a belt of Mississippian volcanic stratigraphy, which hosts numerous VMS showings including Atna Resources' Wolf deposit (4.1 Mt at 6.2% Zn, 1.8% Pb and 84 g/t Ag). Eagle Plains has been active in the belt since 1996 when they originally staked the **Fire** and **Ice** properties (Yukon MINFILE, 1997, 105F 071, 073). In addition to the reconnaissance program, Eagle Plains conducted geological mapping, soil geochemistry and prospecting, followed by a 6-hole, 730-m helicopter-supported drill program on the Fire (Fig. 11), Ice and **St. Cyr** properties (Yukon MINFILE, 1997, 105F 102). The drilling resulted in the discovery of a mineralized barite horizon on the Fire property, as well as on the Ice property, 7 km to the southwest. Four holes drilled from the same setup intersected the barite horizon on the Fire property with the best results obtained in DDH F00-02, with 15.1 m at 22.4 g/t Ag, 1529 ppm Pb, 6033 ppm Zn, and includes 3.3 m at 65.5 g/t Ag, 4930 ppm Pb and 2.15% Zn. A single hole was collared on the Ice property (Fig. 12), which intersected a thick-bedded barite-pyrite-tuff unit. The

Figure 12. *Tim Termuende (right), President of Eagle Plains Resources and Bernie Kreft examine massive barite-sphalerite-galena mineralization in talus at the SB showing on the Ice property.*

barite horizon averaged 8.9 g/t Ag, 5019 ppm Zn and 1659 ppm Pb over 48.4 m, including 1.3 m of 5.64% Zn, 0.17% Pb and 12.3 g/t Ag. Eagle Plains subsequently staked claims on regional targets identified from the reconnaissance program and prospective stratigraphy adjoining the Fire and Ice properties. Additional drilling is planned to follow up on this significant discovery in 2001.

Approximately 40 km to the northwest of the Fire and Ice properties, Tanana Exploration, a local private exploration company, conducted a program of geological mapping, prospecting, and hand- and blast-trenching on their **Fox** property (Yukon MINFILE, 1997, 105F 036). Trenching was conducted in the Ram zone, up slope from numerous large (up to several tonnes) float boulders of rusty weathering, white quartz-sulphide mineralization, containing bands and lenses of sphalerite and galena. Float in the area assays up to 11.5% Zn, 10.2% Pb and 78.9 g/t Ag. The trenching exposed an intensely oxidized and sericite-altered phyllite horizon over a 500-m strike length. Some trenches contained quartz-sulphide zones as lenses or replacement (?) zones. Trenching returned elevated Zn-Pb-Ag-Cu values, while select samples returned up to 9.7% Zn. Prospecting on Avalanche Ridge, 3.5 km northeast of the Ram zone, revealed float boulders of rusty-weathering, white quartz-sulphide mineralization similar to that from the Ram zone (Fig. 13). Float from Avalanche Ridge assayed up to 21.4% Zn, 4.4% Pb and 20.8 g/t Ag. Prospecting also located quartz-carbonate-sulphide veining at the contact of the phyllite and overlying chlorite schist. Float samples in the area returned up to 20.2 g/t Au, 569.7 g/t Ag, 17.5% Pb and 6.5% Zn.

Fairfield Minerals continued to explore the **Mor** property (NTS 105C/1) in the Teslin area of southern Yukon. The property is underlain by stratigraphy that has been correlated to the Nasina Assemblage of the Yukon-Tanana Terrane, which hosts VMS deposits in the Finlayson Lake district. During the 2000 exploration

Figure 13. *Ken Galambos (centre) of the Yukon Mining Incentive Program examines newly discovered massive sulphide mineralization in float at the Avalanche Ridge showing on the Fox property of Tanana Exploration.*

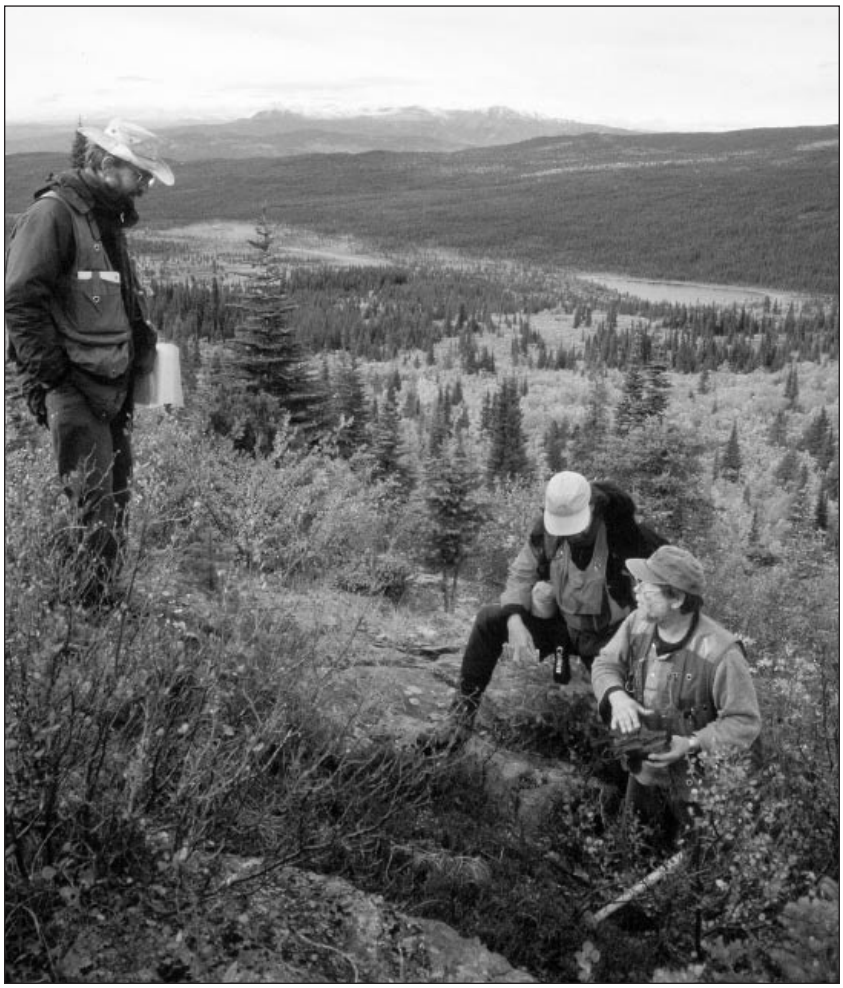

Figure 14. *Ed Balon (right) and Wojtec Jakubowski (left) with Fairfield Minerals examine a pyrite-magnetite horizon hosted in chlorite schist on the Mor property with Maurice Colpron of the Yukon Geology Program (far left).*

season, Fairfield conducted grid soil sampling, auger drill soil sampling, prospecting, as well as magnetic and VLF (very low frequency) ground geophysical surveys. The work confirmed, enhanced and extended the main anomaly trend (Cu-Pb-Zn-Ag ± Au ± Ba), which encompasses the discovery showing (Fig. 14). Grab samples from mineralized quartz-sericite schist/rhyolite tuff at the discovery showing has returned assays of up to 8.91 g/t Au, 82.2 g/t Ag, 1.05% Cu, 5081 ppm Pb and 5515 ppm Zn. Current studies in the area by the Ancient Pacific Margin NATMAP (National Mapping Program) have advanced the geologic understanding of this portion of Yukon-Tanana Terrane and have highlighted the potential for future discoveries in the area (Colpron and Yukon-Tanana Working Group, this volume).

Atna Resources acquired a 66.7% interest in the **Marg** (Yukon MINFILE, 1997, 106D 009) property located near Mayo in central Yukon; Atna Resources Ltd.'s joint venture partner is Cameco Corporation. The property hosts a volcanogenic massive sulphide deposit with an indicated resource of 5.5 Mt grading 1.8% Cu, 4.6% Zn, 2.5% Pb, 62.7 g/t Ag and 0.98 g/t Au. The deposit is hosted within metasedimentary and metavolcanic rocks of the Devonian-Mississippian Earn Group and Mississippian Keno Hill Quartzite. These rocks form part of the Selwyn Basin, an off-shelf sequence that developed at the continental margin prior to Cordilleran deformation and accretion. Atna conducted a program of core re-logging, structural mapping and prospecting to re-assess the potential of the property. The program resulted in a re-interpretation of the geological setting of the deposit, which identified new areas of potential for additional resources. Subsequent prospecting discovered new mineralized areas. Atna is currently seeking a joint venture partner on the Marg property. For a description of the structure and stratigraphy of the Marg deposit, see Holbek et al. (this volume).

Copper Ridge Exploration acquired an option from Placer Dome Ltd. and U.S. Steel Group to purchase a 100% interest in the **Howards Pass** Zn-Pb-Ag sedimentary exhalative deposit (Yukon MINFILE, 1997, 105I 012). Subsequent to the Placer Agreement, Copper Ridge granted Billiton Metals Canada Inc. an option to obtain a 70% interest in the property. Billiton unfortunately withdrew for non-technical reasons from the project after their due-diligence review. The withdrawal of Billiton resulted in Copper Ridge not being able to make the initial payment to the vendors under the Placer Dome Agreement, and Copper Ridge was considering withdrawing from the project.

Figure 15. *Banded sphalerite-galena mineralization showing de-watering structures from Hole A-67 drilled in the Don Valley area at the Howards Pass project.*

The deposit hosts a resource calculated by Placer Dome of 110.5 Mt grading 5.4% Zn and 2.3% Pb. Howards Pass is located in the Selwyn Basin, a late Precambrian through Middle Devonian clastic and carbonate basin of off-shelf or deeper-water facies. The Selwyn Basin contains one of the world's largest concentrations of sediment-hosted stratiform zinc, lead deposits. Copper Ridge proposed examining the feasibility of the Howards Pass deposit by utilizing bulk mining methods, hydrometallurgy and gas turbine power. Hydrometallurgy has the potential to increase zinc recoveries and dramatically reduce the transportation costs associated with the project by producing zinc metal on-site, therefore eliminating the production of concentrates that need to be transported to a smelter. The availability of natural gas in southeastern Yukon from either the Kotaneelee gas field or from the proposed Alaska Highway pipeline, offers the option of producing gas turbine power as opposed to expensive on-site diesel generation.

Copper Ridge completed an eight-hole diamond-drilling program on the property to test two areas, the Don Valley (Fig. 15) and the Anniv Central, for near-surface open-pit potential. The three holes drilled in the Don Valley area all intersected significant mineralization, returning values up to 25.4 m of 4.34% Zn in Hole A-67, 14.5 m of 4.32% Zn in Hole A-69 and 23.7 m of 4.27% Zn in Hole A-71. Drilling in the Anniv Central area tested an overburden-covered area that had not been previously drill tested. The drilling defined the stratigraphy in the area with the final hole testing the complete mineralized section, which returned 19.6 m of 6.14% Zn and 1.99% Pb, including an 8.0 m section grading 10.56% Zn and 3.53% Pb.

Nordac Resources Ltd. conducted two short diamond-drilling programs on the **Quarterback** (QB; Yukon MINFILE, 1997, 105B 098) and **Blue Heaven** (Yukon MINFILE, 1997, 105B 020) properties in the Rancheria silver district in southern Yukon. Drilling was directed at zinc-lead mineralization in carbonate replacement zones. The QB drilling tested two zones: one, a mineralized fault zone, which extended into non-reactive schist and returned disappointing results, and the second, a replacement zone, where drilling revealed that the zone had a shallower

Figure 16. *Craig Hart (left) of the Yukon Geology Program examining core with geologists from Alexis Resources on the Canadian Creek property.*

than expected dip. This limits tonnage potential of the zone. The best hole in the replacement zone returned 39.9 g/t Ag, 0.73% Zn and 0.48% Pb over 9.88 m. On the Blue Heaven property, a single hole into a replacement zone adjacent to a high-grade vein fault revealed that the replacement style mineralization did not extend into the adjacent carbonate rocks. The hole returned 6.0 g/t Ag, 2.67% Zn and 0.10% Pb over 3.11 m.

Alexis Resources conducted a diamond-drilling program on the **Canadian Creek** (Yukon MINFILE, 1997, 115J 101) property optioned from Wildrose Resources. The Canadian Creek property is adjacent to the Casino deposit (531 Mt grading 0.26% Cu, 0.025% MoS_2, and 0.25 g/t Au) located in the Dawson Range approximately 150 km south of Dawson. Porphyry copper-gold-molybdenum and porphyry gold mineralization were targeted with a 12-hole reconnaissance style drill program (Fig. 16) on the large property. Hole CC-2000-01 was drilled on claims optioned from Great Basin Gold where drilling in 1994 in hole 94-319 returned 0.73 g/t Au over 44 m. Hole CC-2000-01 confirmed the previous result returning 50.5 m grading 0.71 g/t Au including 25.7 m of 1.04 g/t Au. The Creek zone, 7.5 km west of the Casino deposit, is a large geophysical target defined by a 2.4- by 2.0-km induced-polarization chargeability anomaly on the edge of a magnetic-high anomaly. Trenching in the Creek zone has exposed sub-crop of quartz-sericite-altered quartz diorite to monzonite from which composite sampling returned values of 0.72, 0.80 and 0.94 g/t Au. Drilling in and around the Creek zone returned values up to 11.7 m of 0.29% Cu in hole CC-2000-06, 3.0 m of 0.97 g/t Au, 0.12% Cu in CC-2000-11 and 3.0 m of 0.36 g/t Au, 0.20% Cu in hole CC-2000-12. A biotite-altered intrusive float boulder mineralized with malachite-chalcopyrite stockwork was discovered during the program, and contained 3.25% Cu with minor gold and molybdenum.

Prospector International conducted grid and reconnaissance soil sampling, prospecting and mapping on the **Coffee Creek** (Yukon MINFILE, 1997, 115J 050) and **Rude Creek** (Yukon MINFILE, 1997, 115J 022) properties located near the

Canadian Creek property in the Dawson Range of central Yukon. Grid soil sampling on the Coffee Creek property defined a 400- by 900-m, greater than 40-ppb-gold anomaly (up to 694 ppb Au) with elevated arsenic, antimony and mercury. The anomaly is underlain by quartz-mica schist near the northern contact of a mid-Cretaceous granitic intrusive. On the Rude Creek property a 150- by 550-m, greater than 38 ppb gold-in-soil anomaly (up to 1250 ppb Au) was defined. The anomaly has associated anomalous bismuth, silver and arsenic.

In the Whitehorse area, Kluane Drilling and partner Rob Hamel contracted Amerok Geosciences to conduct an induced polarization (IP) survey of the **HAT** claims (Yukon MINFILE, 1997, 105D 053) in the Whitehorse Copper Belt. The survey was conducted to expand an induced polarization (IP) chargeability anomaly identified from a survey conducted by Hudson Bay Mining and Smelting Co. Ltd. in the 1980s. Trenching in 1998 and 1999 on the claims exposed potassically altered granodiorite, which assayed up to 1.05% Cu, 180 ppb Au, 8.7 g/t Ag and 0.061% MoS_2. Two diamond drill holes were drilled in 2000 to test for porphyry-style mineralization at the margin of the IP anomaly. The holes intersected mainly sedimentary rocks and dykes or sills of granodiorite. The first hole intersected a section of high-grade, garnet-diopside-wollastinite skarn, mineralized with bornite and chalcopyrite, which assayed 4.99% Cu, 1.05 g/t Au and 40.3 g/t Ag over 10.55 m (Fig. 17). The drilling illustrates the potential for further discoveries of high-grade copper-gold skarn mineralization in the Whitehorse Copper Belt, which has produced over 10 million tonnes of ore with an average grade of 1.5% Cu, 0.55 g/t Au and 8.1 g/t Ag. The IP anomaly and porphyry potential on the HAT claims also remains to be fully tested.

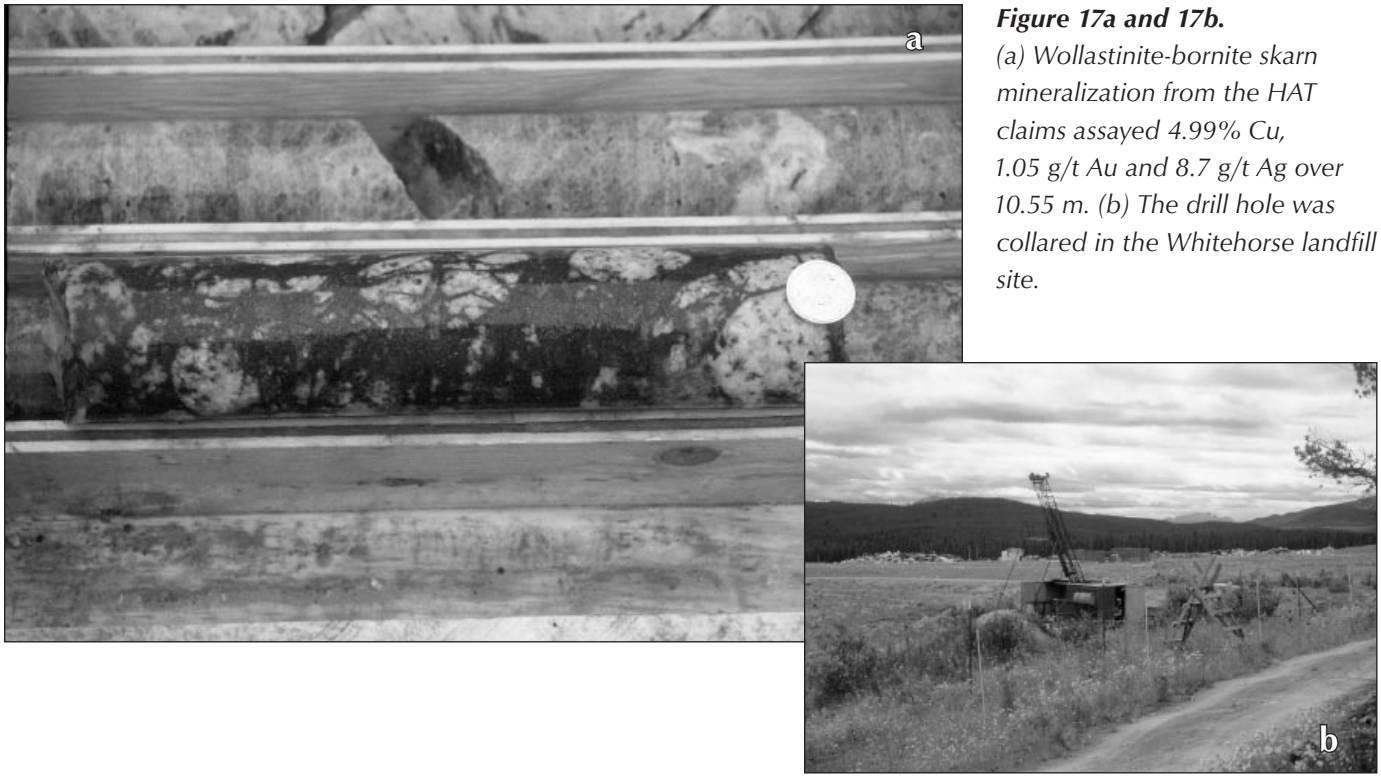

Figure 17a and 17b.
(a) Wollastinite-bornite skarn mineralization from the HAT claims assayed 4.99% Cu, 1.05 g/t Au and 8.7 g/t Ag over 10.55 m. (b) The drill hole was collared in the Whitehorse landfill site.

GOLD EXPLORATION

Gold exploration in 2000 was directed mainly at intrusive-related gold targets within the Tintina gold belt. The recognition of the multiple styles of deposit types in the belt and the potential of intrusive-related gold targets in several mid-Cretaceous plutonic suites has resulted in the Tintina gold belt encompassing a wide area of the Yukon. The projects conducted in 2000 were directed at several of the mid-Cretaceous plutonic suites and several small drilling programs returned significant results.

Canadian United Minerals, a private Yukon-based exploration company, conducted a small 350-m, eight-hole diamond-drilling program on the **Horn** property (NTS 116B/07) located within the boundaries of the proposed Tombstone Territorial Park. The claims cover part of a roof pendant of sedimentary rocks of Devonian to Jurassic age enclosed by quartz monzonite of the Tombstone pluton. Pyroxene and pyrrhotite skarns containing gold, silver, copper, lead, zinc, arsenic and bismuth are developed in Permian Takhandit Formation limestone lenses. The drilling was conducted to define a mineral reserve in the high-grade gold skarn exposed by trenching in 1999. Channel sampling in Trench 99-01 has returned values up to 58.9 and 85.44 g/t Au over widths of 5.94 and 4.45 m, respectively. Three fences of drill holes spaced 15 m apart were drilled beneath the exposure of pyrrhotite-chalcopyrite skarn in Trench 99-01. The drilling intersected skarn in all holes, with several intersections containing abundant visible gold (Fig. 18). The company has not yet released detailed information on the results of the program. Several targets on the property defined by mineralized float, Kubota trenching and detailed ground magnetic surveys remain to be tested by drilling.

Redstar Resources conducted a 9-hole, 1211-m diamond-drilling program on the **Clear Creek** property (Yukon MINFILE, 1997, 115P 012, 023) optioned from Newmont Exploration of Canada. Drilling (Fig. 19) was directed at the Bear Paw breccia zone, which was discovered through drilling late in 1999. The Bear Paw breccia is a quartz-breccia zone cutting metasedimentary and intrusive rocks

Figure 18. *Shawn Ryan (left) of Canadian United Minerals and Dave Tenney, consulting geologist, point to visible gold in drill core from the Horn property.*

Figure 19. *Diamond drill on the Bear Paw breccia zone at the Clear Creek property.*

(Fig. 20). The zone is defined by a 1300- by 1100-m gold-arsenic-bismuth geochemical anomaly, which coincides with a magnetic-low geophysical anomaly. Drilling followed up on the discovery hole BP99-01, which intersected 26.7 m of 2.0 g/t Au. All of the holes drilled in 2000 intersected significant gold mineralization in quartz breccia. Two holes were drilled along an east-west section that includes the discovery hole BP99-01. Hole BP2000-03 was drilled 50 m from the discovery hole and returned 34.9 m of 2.0 g/t Au in quartz breccia; hole BP2000-10 was drilled 50 m from hole BP2000-03 and intersected 31.8 m of breccia grading 2.3 g/t Au. Interpretation of the drill results, utilizing recent structural interpretations (Stephens et al., 1999, Stephens and Weekes, this volume) suggest the mineralization is hosted by an easterly trending structure. Intersections peripheral to the main structure returned values up to 21.0 m grading 1.0 g/t gold in quartz breccia. Narrow intersections of calc-silicate style mineralization were also

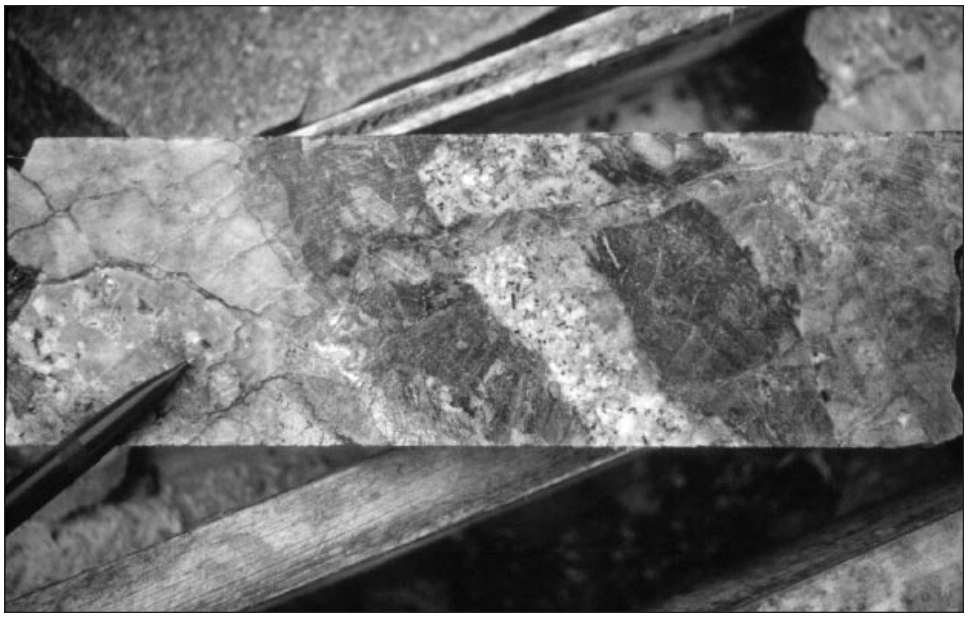

Figure 20. *Metasedimentary and intrusive clasts in quartz breccia from hole BP2000-03 on the Clear Creek property of Redstar Resources.*

intersected indicating additional styles of undiscovered mineralization are present in the area.

Newmont Exploration of Canada has optioned several contiguous properties in the Mayo area of central Yukon. The properties include the **Aurex** (Yukon MINFILE, 1997, 105M 060) optioned from Expatriate and YKR International Resources, Expatriate's **Sinister** property, and the **McQuesten** (Yukon MINFILE, 1997, 105M 029) optioned from NovaGold and Eagle Plains Resources. Newmont conducted airborne geophysical surveys, Bombardier-mounted auger drilling, mapping and prospecting over the properties, followed by a 5-hole, 883-m diamond-drilling program on the McQuesten property. The McQuesten property is underlain by Neoproterozoic to Lower Cambrian Hyland Group metasedimentary rocks in the immediate hanging wall of the regional-scale Robert Service Thrust. The Hyland Group rocks are variably calcareous. Previous drilling and trenching programs indicated a large mineralized system, consisting of disseminated and massive pyrrhotite, pyrite and arsenopyrite in quartz-sericite and calc-silicate alteration zones. The mineralized zone is contained within a structural corridor that is over 3 km in length. The five holes drilled by Newmont tested a 1.2 km section of the structural corridor and all five holes intersected significant mineralization. Results include: Hole MQ-00-01 intersecting 2.5 m of 3.2 g/t Au, MQ-00-02 intersecting 13.5 m of 0.7 g/t Au, MQ-00-03 intersecting 3.0 m of 2.0 g/t Au and 3.0 m of 3.0 g/t Au, MQ-00-04 intersecting 11.5 m of 1.5 g/t Au and 36.6 m of 1.4 g/t Au, and hole MQ-00-05 intersecting 13.9 m of 1.27 g/t Au. The property is adjacent to the Keno Hill silver-lead-zinc district, which has produced over 62 billion grams (200 million ounces) of silver. The property is accessed via the all-weather Silver Trail highway and is bisected by a hydroelectric power transmission line.

Newmont Exploration of Canada conducted a detailed airborne magnetic survey, and soil sampling followed by diamond drilling on the **Longline** property (Yukon MINFILE, 1997, 105N 024) of Barramundi Gold, located in west-central Yukon. The property is underlain by granodiorite of the Klotassin Batholith, which is host to

Figure 21. *The V-1 vein, pictured here, is one of several high-grade quartz-sulphide vein occurrences on the Longline property of Barramundi Gold.*

several high-grade quartz-sulphide vein occurrences (Fig. 21). Newmont drilled six holes, totalling 1750 m, one to test the down-dip extension of the high-grade V3 gold vein, and the remaining five testing the 141 zone, a large arsenic ± gold, silver, bismuth, antimony soil anomaly. The down-dip hole on the V3 vein intersected two veins containing visible gold. The uppermost vein assayed 2.21 g/t Au over 0.20 m, while the second vein, located 15 m deeper in the hole, intersected 5.36 g/t Au over 0.31 m. The holes in the 141 zone tested structural zones interpreted from the airborne magnetic survey with coincident anomalous soil geochemistry. The drilling intersected zones of quartz-sericite-carbonate alteration as haloes around arsenic-lead-copper-bismuth-bearing sulphide veins. The best intersections from drilling was in hole LL-00-06, which assayed 0.64 g/t Au and 936 ppm Bi over 0.20 m and a second zone of 1.08 g/t Au over 0.20 m. Newmont also flew a detailed airborne magnetic survey over the **Moosehorn** property, optioned from Troymin Resources, adjacent to the Longline property.

Teck Exploration performed a program of geological mapping, prospecting, soil sampling and excavator trenching on the **Ten** property (Yukon MINFILE, 1997, 115N 110). The bulk of the trenching was performed on the Jual zone, an area of quartz veining hosted in a Cretaceous quartz monzonite intrusive (Fig. 22). Phelps Dodge conducted soil sampling, mapping and excavator trenching on the **Flume** property, which is contiguous with Teck's TEN claims. Their trenching was directed at areas of anomalous geochemistry in Yukon-Tanana Terrane metamorphic rocks peripheral to the quartz monzonite intrusive. No results were released from either program.

In the Dawson area, Nordac Resources conducted exploration on the **Eureka**, **Armenius** (Yukon MINFILE, 1997, 115N 057) and **Track** (Yukon MINFILE, 1997, 116C 137) properties, which are part of the Eureka joint venture with Expatriate Resources. Grid soil sampling, mapping, prospecting and rock sampling was conducted on the Eureka and adjoining Armenius properties. Three zones have been identified within a north-trending corridor of gold-in-soil anomalies. The three zones are characterized by crackle and milled breccia in float. Trenching in the

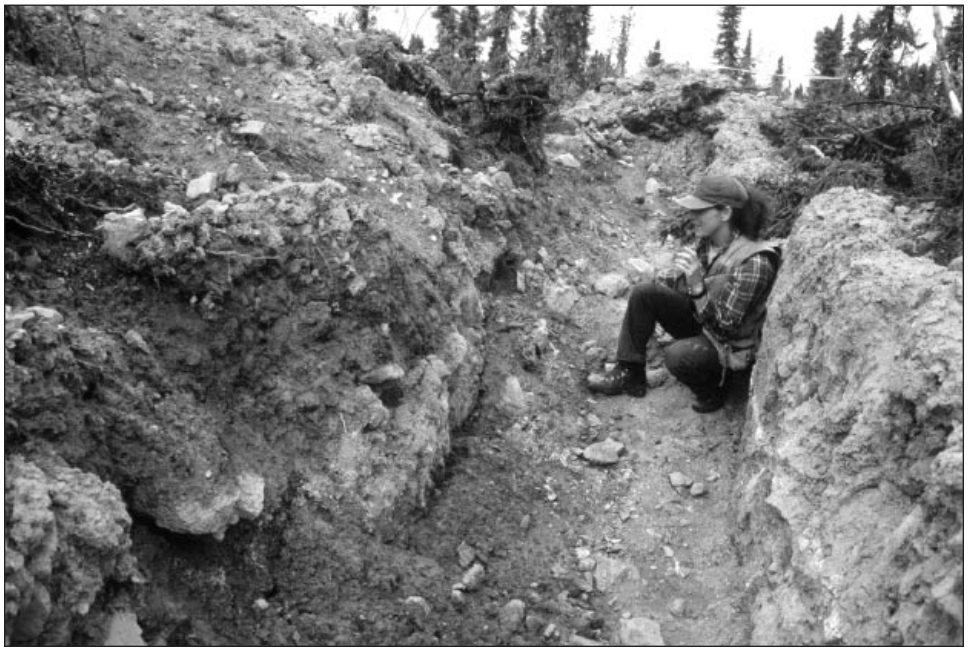

Figure 22. *Jean Pautler, formerly with Teck Exploration examines mineralization in the Jual zone on the Ten property.*

Figure 23. *Herman Liedtke examines the Mitchell shaft excavated in 1911 and exposed by trenching in 2000.*

headwaters of Eureka Creek has exposed a northeast-trending breccia zone, which assayed 0.33 g/t Au over 6.5 m. Composite float samples from the zone have returned values of 1.85 and 1.40 g/t Au. Gold values up to 14.42 g/t Au in float were obtained from the Allen showing, and at the Childs showing, float samples ranged from 0.46 to 3.97 g/t Au.

Klondike Source Limited, a private Australian company, conducted a program of Landsat and air-photo interpretation, structural mapping, prospecting and a Mobile Metal Ion (MMI) soil sampling survey on the **Hunker** property in the Dawson area. The company is re-interpreting the geology and structural setting of the area underlying the bulk of the Klondike Gold Fields.

Elsewhere in the Dawson area, JAE Resources, a private Yukon-based company, conducted trenching and sampling on the **Mitchell** property (Yukon MINFILE, 1997, 115O 068) near the head of Hunker Creek. The trenching was directed at the extension of the Mitchell vein, a mesothermal quartz-sulphide vein (Fig. 23), a new area of quartz veinlets exposed by trenching near the Hunker summit, and a multi-element soil geochemical anomaly.

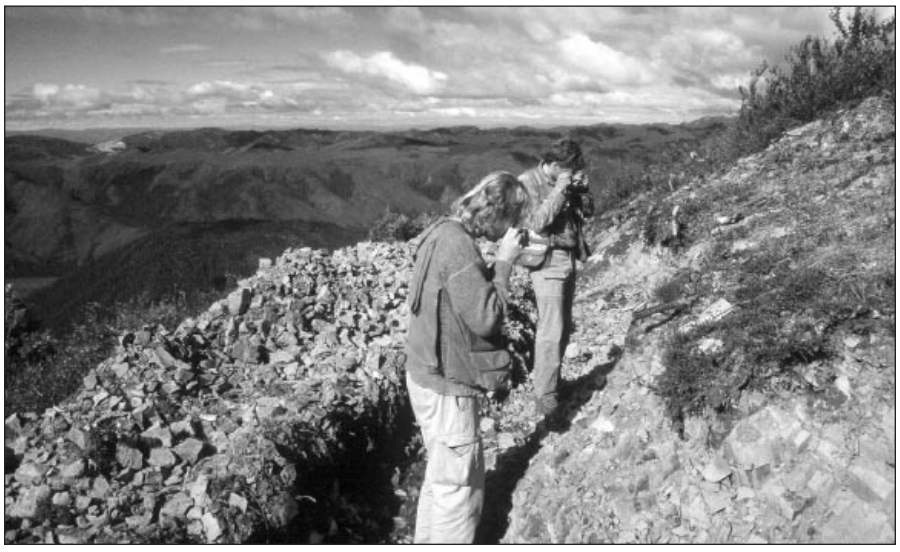

Figure 24. *Marco Vanwermeskerken (left) and Bart Jaworski (right) with International Kodiak Resources examine intrusive-hosted mineralization in Area 5 on the Oki-Doki property. The Brewery Creek mine is just visible in the background.*

International Kodiak Resources continued to explore their extensive **Oki Doki** property (Yukon MINFILE, 1997, 116B 013, 033) that adjoins the Brewery Creek mine. Two main areas were targeted in the current program. Area 5 is an intrusive-hosted gold target east of the mine (Fig. 24). A previously unmapped Cretaceous intrusion is coincident with a 600- by 800-m soil

anomaly with up to 564 ppb Au, 98 ppm Bi and 6 ppm Te. Kodiak conducted additional mapping, sampling and helicopter-supported Kubota trenching in Area 5. Area 3 is just to the north of the Brewery Creek mine. Excavator and Kubota trenching, and additional soil sampling and mapping were performed on areas of anomalous silver-vanadium-zinc-nickel soil geochemistry in Devonian-Mississippian Road River shale. No results have been released from the current program.

In southeastern Yukon, NovaGold Resources conducted a 4-hole, 772-m diamond-drill program on the **Sun/Sprogge** (Yukon MINFILE, 1997, 105H 034) property. Several areas of mineralization exist on the property including skarn, high-grade arsenopyrite veins and disseminated mineralization in quartz-pebble conglomerate and sandstone of the Neoproterozoic to Lower Cambrian Hyland Group. The drilling tested an area of anomalous gold identified by previous contour and limited grid soil sampling (Fig. 25). The area is underlain by argillically altered quartz-pebble conglomerate and sandstone with interbedded phyllite. Silicification, quartz veining, quartz-arsenopyrite veining, limonite, and finely disseminated sulphides characterize the area. The drilling intersected wide zones of argillic and sericitic alteration, quartz veining, limonitic fractures and disseminated sulphides (mainly pyrrhotite and pyrite). No results were released from the program.

Athlone Resources conducted a small program of soil sampling, mapping and prospecting on the adjacent **HY** claims optioned from Phelps Dodge Resources.

Omni Resources and Trumpeter Yukon Gold amalgamated to form Tagish Lake Gold Corporation. The company holds a large number of claims in the Wheaton River gold district south of Whitehorse that hosts three known gold-silver deposits: **Skukum Creek** (Yukon MINFILE, 1997, 105D 022), **Mt. Skukum** (Yukon MINFILE, 1997, 105D 158) and the **Goddell** (Yukon MINFILE, 1997, 105D 025). In 2000, the company hired CME consultants to compile the on-site exploration data, locate diamond drill core and drill sites, and conduct assessment work on the claims. The company also added the historic **Charleston** vein (Yukon MINFILE, 1997,

Figure 25. *Late season drilling on the Sun/Sprogge property of NovaGold Resources.*

105D 020) to their claim holdings in the region. Grab samples from the Charleston assayed up to 18.6 g/t Au. In 2001, the company intends to concentrate their efforts on upgrading and expanding the mineral resource in the Skukum Creek deposit.

Al Carlos conducted a geochemical survey utilizing the enzyme-leach technique on his **Grew Creek** (Yukon MINFILE, 1997, 105K 009) property. Carlos collected 558 samples on a 100- by 25-m-spaced cut grid over an area approximately 1 km east of the Grew Creek deposit. Grew Creek is an epithermal gold deposit adjacent to the Robert Campbell Highway, located midway between Faro and Ross River in central Yukon. The deposit hosts a drill-indicated geological resource of 773,012 tonnes grading 8.9 g/t Au and 33.6 g/t Ag (Christie, 1992). The enzyme-leach survey was directed at refining targets in a till-covered area that had produced spotty anomalies through conventional geochemical surveys. Anomalies were also indentified here through previous airborne electromagnetic and very low frequency (VLF) surveys. Five anomalous areas were identified during the survey, four along a west-northwest-trending structure supported by a ground-VLF survey conducted this summer. One of the four anomalies is associated with bismuth, an element not usually detected by enzyme-leach surveys. An interpretation of the survey suggests the presence of a buried rhyolite dome or unexposed Cretaceous intrusive. The fifth anomaly was identified to the south of the structural trend adjacent to an outcrop of silicified Tertiary sedimentary rock, which returned assays up to 2110 ppb Au. Mr. Carlos is seeking joint venture partners for the property.

Figure 26. *Santoy Resources geologists, Vice-president, Exploration, Ron Nichols (background) and Paul Wodjak (foreground) of the British Columbia Geological Survey examine mineralization on the Klu property.*

PLATINUM GROUP EXPLORATION

The recent increase in the value of platinum group metals (PGM) has captured the attention of exploration companies worldwide. Yukon experienced an increase in exploration for platinum group metals, however all the programs that were conducted in 2000 were grassroots in nature with the exception of Santoy Resources' work on the Klu property. Most programs were conducted in Triassic intrusive complexes in western Yukon within the 'Kluane mafic-ultramafic belt', which has long been recognized as having high PGM potential. The belt is described in detail by Hulbert (1997). The Yukon has high potential to host PGM deposits in several different geological settings.

Santoy Resources Ltd. optioned the **KLU** (Yukon MINFILE, 1997, 115G 003) claims in the Kluane mafic-ultramafic belt from Inco Ltd. The property covers an 18-km section of the belt, which contains six mafic-ultramafic intrusions (Fig. 26). They intrude Hasen Creek sedimentary rocks in several places at virtually the same stratigraphic position, which suggest the bodies may be one intrusion represented in fault-repeated sections of the stratigraphy. The most significant occurrence on the claims is a

Figure 27. *Adam Travis (foreground) with Santoy Resources examines the Sweet Sixteen showing hand trench on the Klu property.*

discovery made by Inco in 1994, which consists of small chalcopyrite-pyrrhotite lenses in sedimentary rocks at the base of the Spy sill. These lenses assay up to 2.6% Ni, 10.4% Cu, 0.09% Co, 75.8 g/t Pt, 7.9 g/t Pd and 7.0 g/t Au at the Spy showing. Santoy conducted a program of geological mapping, prospecting, trenching and soil sampling aimed at testing for widespread disseminated mineralization along the contact of the Spy sill with underlying sedimentary rocks. The program was successful in identifying disseminated mineralization over a minimum strike length of 950 m to the northwest of the Spy showing. Chip sampling returned values up to 0.45% Cu, 0.16% Ni, 7.07 g/t Pt, 1.34 g/t Pd and 0.69 g/t Au over 1.0 m at the Spy occurrence, and 0.12% Cu, 0.04% Ni, 1.85 g/t Pt, 1.55 g/t Pd and 1.07 g/t Au over 1.2 m at the Sweet Sixteen (Fig. 27) occurrence. Grab samples within the Spy sill, away from the contact zone, returned values up to 1.91 g/t Pt, 0.87 g/t Pd and 0.51 g/t Au suggesting the potential for additional mineralized horizons within the sill. Significant mineralization was also discovered on other areas of the property. Santoy is compiling the extensive Inco database on the property, which includes high-resolution aeromagnetic and electromagnetic surveys, limited University of Toronto electromagnetic ground (UTEM) surveys and geochemical surveys. Santoy intends to test the favourable stratigraphic interval with drilling in 2001.

Nordac Resources Ltd. conducted prospecting, soil sampling and hand trenching at the **Burwash** property (Yukon MINFILE, 1997, 115G 100) located within the Kluane mafic-ultramafic belt. Anomalous Pt-Pd-Ni-Cu from soil sampling outlined a 1000-m-long, 200- to 500-m-wide zone, which corresponds to a mafic-ultramafic dyke complex. Chip sampling from the margin of a 50-m-wide pyoxenite dyke within the zone returned a weighted average of 0.57 g/t Pt, 0.32 g/t Pd, 0.16 g/t Au, 0.22% Ni and 0.46% Cu over 7.0 m.

Auterra Ventures Inc. conducted a small program of geological mapping, prospecting and trenching on the **AR** claims (Yukon MINFILE, 1997, 115G 026) located in Arch Creek within the Kluane mafic-ultramafic belt. The property is located 5 km northwest of the Wellgreen deposit (Yukon MINFILE, 1997, 115G 024).

ACKNOWLEDGEMENTS

This report is based on public information gathered from a variety of sources. It also includes information provided by companies through press releases, property summaries provided to the department by companies and from property visits conducted in the 2000 field season. The cooperation of companies in providing information and their hospitality during field tours are gratefully acknowledged. Editing by Diane Emond and Leyla Weston is appreciated.

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APPENDIX 1: 2000 EXPLORATION PROJECTS

BS – Bulk Sample
D – Development
DD – Diamond Drilling
ES – Environmental Studies
F – Feasibility
G – Geology
GC – Geochemistry
GP – Geophysics
M – Mining
PD – Percussion Drilling
PF – Prefeasibility
R – Reconnaissance
T – Trenching
U/GD – Underground Development

PROPERTY	COMPANY	MINING DISTRICT	MINFILE # or (1:50 000 NTS)	WORK TYPE	COMMODITY
AR	Auterra Ventures Inc.	Whitehorse	115G-026	G,GC,T	PGE-Cu-Ni
Armenius	Expatriate/Nordac	Dawson	115N-057	G,GC,T	Au
Aurex	Expatriate/YKR	Mayo	105M-060	G,GC	Au
Blue Heaven	Nordac Resources	Watson Lake	105B-020	G,GC, DD	Ag-Pb-Zn-Cu
Brewery Creek	Viceroy Resources	Dawson	116B-160	M	Au
Caribou Creek/Mor	Brett/Fairfield Minerals	Watson Lake	(105C/1,5)	G,GC	Pb-Zn-Ag-Cu
Canadian Creek	Alexis/Wildrose Resources	Whitehorse	115J-036	G, DD	Cu-Au
Clear Creek	Redstar/Newmont	Mayo	115P-012,013	G, GC, DD	Au
Coffee Creek	Prospector International	Whitehorse	115J-050	G,GC	Au-Cu
St. Cyr	Eagle Plains Resources	Watson Lake	105F-102	G,GC,DD	Pb-Zn-Ag
Eureka	Expatriate/Nordac	Dawson	115N-057	G,GC,T	Au
Fire/Ice	Eagle Plains Resources	Watson Lake	105F-071,073	G,GC,DD	Pb-Zn-Ag
Fox	Tanana Exploration	Watson Lake	105F-036	G,GC,T	Cu-Pb-Zn-Au
Goal-Net	Expatriate Resources	Watson Lake	(105G/7,8)	G,GC,DD	Pb-Zn-Cu-Ag-Au
Grew Creek	Al Carlos	Whitehorse	105K-009	G,GC	Au-Ag
HAT	Coyne & Sons	Whitehorse	105D-053	G,GP,DD	Cu-Au-Ag
Horn	Canadian United Minerals	Dawson	(116B/7)	G,DD	Au-Cu
Howards Pass	Copper Ridge Exploration	Watson Lake	105I-012	G,GC,DD	Zn-Pb-Ag
Hunker	Klondike Source/ Barramundi	Dawson	(115NO/14,15)	G,GC	Au
Hy	Athlone Resources	Watson Lake	(105H/15)	G,GC	Au
Keno Hill	United Keno Hill	Mayo	105M-001	D	Ag-Pb-Zn
Klu	Santoy Resources	Whitehorse	115G-003	G,GC,T	PGE-Cu-Ni
Kudz Ze Kayah	Expatriate Resources	Watson Lake	105G-117	GP	Pb-Zn-Cu-Ag-Au
Livingstone	Larry Carlyle/Max Fuestner	Whitehorse	105E-001,042,049,054	G,GC,T	Au-Ag
Longline	Barramundi Gold Ltd./Newmont	Whitehorse	115N-024	G,GC,GP,DD	Au
McQuesten	Newmont/Novagold/Eagle Plains Resources	Mayo	105M-029	G,GC,DD	Au
May	Eagle Plains Resources	Mayo	115P-056	G,GC	Au
Marg	Atna Resources	Mayo	106D-009	G,GC	Pb-Zn-Cu-Ag-Au
Minto	Minto Resources	Whitehorse	115I-021,022	D	Cu-Ag-Au
Mitchell	JAE Resources	Dawson	115O-068	T	Au
Moosehorn	Newmont/Troymin	Whitehorse	115N-024	GP	Au
Nug	Eagle Plains Resources	Mayo	105O-048	G,GC	Au
Oki-Doki	International Kodiak	Dawson	(116B/1,A/4)	G,GC,T,GP	Au
P7P	Pacific Ridge Exploration	Dawson	115O-015	G	PGE-Cu-Ni

Appendix 1: continued

BS – Bulk Sample
D – Development
DD – Diamond Drilling
ES – Environmental Studies
F – Feasibility
G – Geology
GC – Geochemistry
GP – Geophysics
M – Mining
PD – Percussion Drilling
PF – Prefeasibility
R – Reconnaissance
T – Trenching
U/GD – Underground Development

PROPERTY	COMPANY	MINING DISTRICT	MINFILE # or (1:50 000 NTS)	WORK TYPE	COMMODITY
Quarterback	Nordac Resources	Whitehorse	105B-098	G,DD	Pb-Zn-Ag
Revenue	ATAC/YKR International	Whitehorse	115I-042	G	Cu-Au-Ag-WO_3-MoS_2
Rude Creek	Prospector International	Whitehorse	115J-022	G	Au-Cu
Skukum	Tagish Lake Gold	Whitehorse	105D-022,025,158	G	Au-Ag
Sun/Sprogge	NovaGold/Kennecott	Watson Lake	105H-034	G,DD	Au
Swan	Prospector International	Mayo	105O-024	G	Au
Track	Expatriate/Nordac	Dawson	116C-137	G,GC	Au
Wash	Nordac Resources	Whitehorse	115G-100	G,GC,T	Ni-Cu-Au-PGE
Wolverine	Expatriate/Atna Resources	Watson Lake	105G-073	G,GC,DD	Pb-Zn-Cu-Ag-Au

APPENDIX 2: 2000 DRILLING STATISTICS

PROPERTY	COMPANY	DIAMOND DRILL	
		METRES	# HOLES
Blue Heaven	Nordac Resources	90	1
Canadian Creek	Alexis Resources Ltd.	2066	12
Clear Creek	Redstar Resouces/Newmont	1211	9
Fire	Eagle Plains Resources	509	5
Goal/Net	Expatriate Resources	500	3
Horn	Canadian United Minerals	350	8
Howards Pass	Copper Ridge Exploration	717	8
Ice	Eagle Plains Resources	107	1
Longline	Newmont/Barramundi	1753.5	6
McQuesten	Newmont/Nova Gold/Eagle Plains Resources	883	5
Quaterback	Nordac Resources	273	3
St. Cyr	Eagle Plains Resources	105	1
Sun/Sprogge	Nova Gold/Kennecott	772	4
Whitehorse Copper	Coyne and Sons	357	2
Wolverine	Expatriate/Atna	3000	10
TOTAL		**12,693.5**	

YUKON PLACER MINING OVERVIEW, 2000

***William LeBarge*[1]**
Yukon Geology Program

LeBarge, W., 2001. Yukon Placer Mining Overview. *In:* Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 29-30.

Placer mining in the Yukon continued to be an important industry in 2000 despite low precious metal prices and steadily declining mineral exploration activity. A total of 140 mines operated, with approximately 450 people directly employed in the industry. This represents an 18% decrease in the number of mines from 1999. Still, many jobs in the service and hospitality industries are annually generated due to seasonal placer mining activity, especially in the Dawson and Mayo areas. The majority of active mining operations were in the Dawson Mining District, followed by the Whitehorse and Mayo Mining districts.

For 2000, over 85% of the Yukon's placer gold was produced in the Dawson district, which includes the unglaciated drainages of Klondike River, Indian River, west Yukon (Fortymile, Sixtymile, Moosehorn) and lower Stewart River. The remaining gold came from glaciated regions including Clear Creek, Mayo, Dawson Range, Kluane and Livingstone.

Placer gold production in 2000 totalled 76,507 crude ounces (2,379,635 g), compared to 87,680 crude ounces (2,727,155 g) for 1999, which represents a 15% decrease. The total dollar value of Yukon placer gold also dropped in 2000, down to $C 25.4 million from the $C 29.7 million generated in 1999. The 2000 mining season was the first time operators were required to have Mining Land Use licenses on their claims, in addition to water licenses. Along with the continuing low price of gold and unexpectedly high fuel prices, this made for challenging economic conditions for the Yukon's placer mining industry.

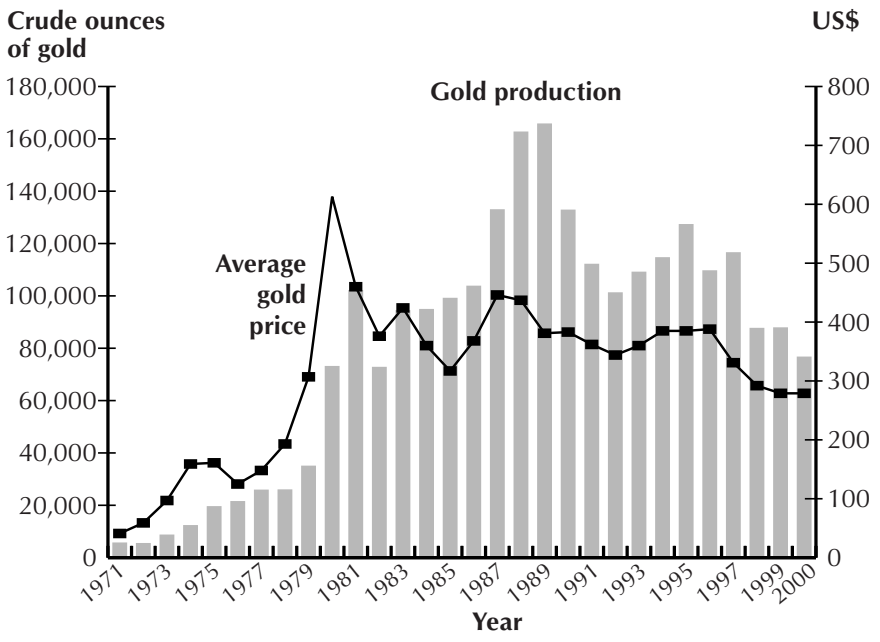

Figure 1. *Yearly gold production figures and average US gold price, 1971-2000, for the Yukon.*

APERÇU DES PLACERS DU YUKON, 2000

L'industrie des placers du Yukon a continué d'être un important secteur d'activité en 2000 malgré le fléchissement du cours des métaux précieux et la baisse progressive des activités d'exploration minière. Quelques 140 sites étaient en exploitation en 2000 (soit une diminution de 18 % par rapport à l'an dernier), pour un total de 450 emplois directs. Il n'en demeure pas moins que de nombreux emplois indirects (secteur des services et de l'hôtellerie-restauration) sont générés annuellement par les activités saisonnières d'exploitation des placers, en particulier dans les régions de Dawson et de Mayo. La plus grande partie des placers en opération se trouve dans le district minier de Dawson, ceux de Whitehorse et de Mayo venant en deuxième et en troisième place.

En 2000, plus de 85 % de l'or d'origine placérienne du Yukon a été produit dans le district de Dawson, qui comprend les bassins non-affectés par les glaciations de la rivière Klondike, la rivière Indian, de l'ouest du Yukon (Fortymile, Sixtymile, Moosehorn) et du cours inférieur de la rivière Stewart. Le reste de la production d'or provenait des régions à modelé glaciaire de Clear Creek, Mayo, Dawson Range, Kluane et Livingstone.

En 2000, la production des placers s'est chiffrée à 76 507 onces brutes (2 379 635 g), comparativement à 87,680 onces brutes (2 727 155 g) pour 1999, soit une diminution de 15 %. La valeur totale des revenus générés par la production placérienne du Yukon a également diminué, passant de 29,7 millions $C en 1999 à 25,4 millions $C cette année. Enfin, c'était la première fois que les exploitants devaient être munis de permis d'aménagement concernant les concessions qu'ils exploitent, en plus de l'habituel permis d'exploitation des eaux. Tous ces facteurs, conjugués au cours relativement bas de l'or et de la hausse des prix du carburant, ont créé des conditions économiques difficiles pour l'industrie des placers du Yukon.

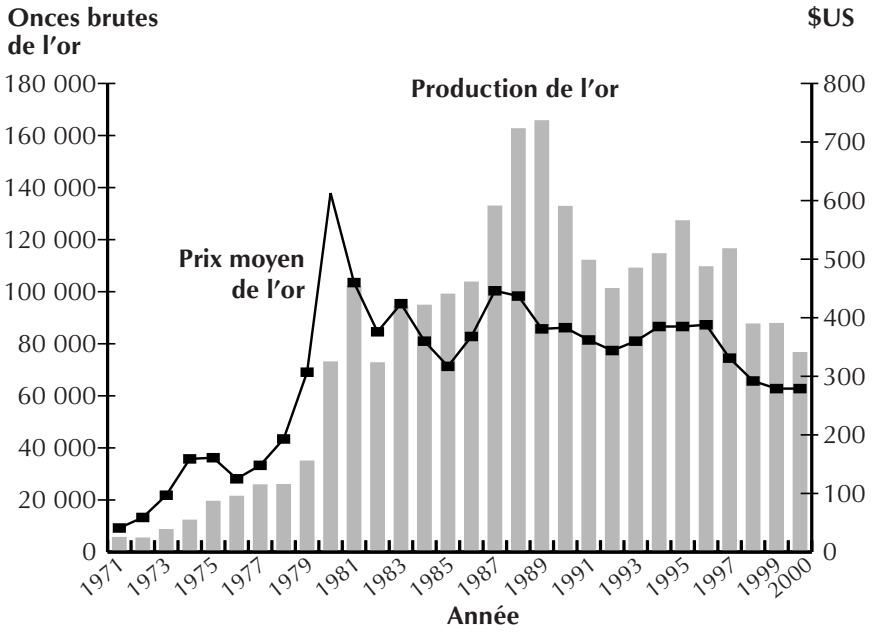

Figure 1. *Production des placers du Yukon par année et prix moyen de l'or en $US, 1971-2000.*

GOVERNMENT

Yukon Geology Program

Grant Abbott
Yukon Geology Program

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Ken Galambos
Mineral Resources Branch, Yukon Government

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Karen Pelletier
Mining Land Use Division, Indian and Northern Affairs Canada

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Yukon Geology Program

***Grant Abbott*[1]**
Yukon Geology Program

Abbott, J.G., 2001. Yukon Geology Program. *In:* Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 33-45.

OVERVIEW

Now in its fifth year, the Yukon Geology Program (Fig. 1) is a de facto Yukon Geological Survey consisting of two integrated and jointly managed offices with different administrative structures (Fig. 2). Federal funding is provided through the Exploration and Geological Services Division (EGSD), Yukon Region of the Department of Indian Affairs and Northern Development (DIAND), while Yukon Territorial Government (YTG) and cost-shared (YTG/DIAND) funding comes through the Mineral Resources Branch of the Department of Economic Development (YTG). The Geological Survey of Canada (GSC) also maintains an office with the Program.

Figure 1. *Yukon Geology Program staff, from left to right (top) Craig Hart, Anna Fonseca, Eric Peterson (bottom) Robert Deklerk, Charlie Roots, Tammy Allen, Mike Burke, Don Murphy, Grant Lowey, Lee Pigage, Ken Galambos, Leyla Weston, Jeff Bond, Panya Lipovsky, Jo-anne vanRanden, Bill LeBarge, Julie Hunt, Ali Wagner, Maurice Colpron, Danièle Héon, Monique Shoniker, Grant Abbott, Shirley Abercrombie, Gary Stronghill, Diane Emond and Gord Nevin.*

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The Yukon Geology Program is an informal and temporary organization that will be transformed into a Yukon Geological Survey when the responsibilities of the Northern Affairs Program of DIAND are devolved to YTG. Negotiations have met delays, and the target date for devolution has once again been moved ahead one year to April 1, 2002. The agreement in principal for the transfer is near completion and all parties expect negotiations to be successful.

During the past year, the Program benefited greatly from continued staff stability. YTG hired two GIS technicians, Gord Nevin and Gary Stronghill. Tammy Allen was appointed to a two-year term position to work on the Central Foreland NATMAP Project in La Biche River map area.

PROGRAM HIGHLIGHTS FOR 2000

FIELDWORK

The Yukon Geology Program is committed to providing a balanced complement of field projects, which provide stimulus to the mining and exploration industry and also takes the longer-term view to develop an understanding of the Yukon regional geological framework. The current state of fieldwork and locations of current field projects are shown in Figure 3.

The Yukon Geology Program continued to commit substantial resources to a joint Geological Survey of Canada-British Columbia Geological Survey Branch – Yukon Geology Program initiative, the Ancient Pacific Margin NATMAP (National Mapping Program) project. This project is a multidisciplinary effort to better

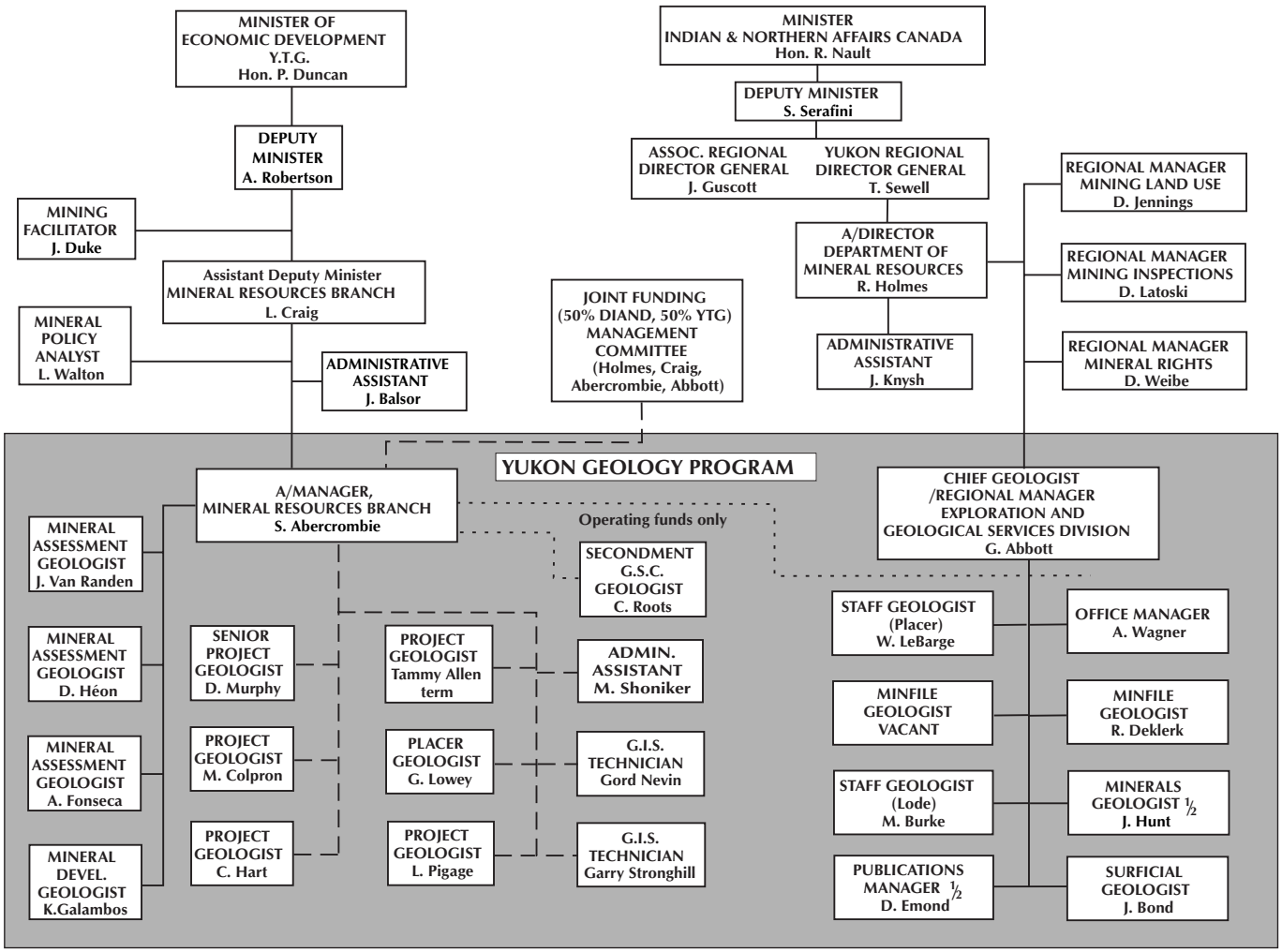

Figure 2. *Yukon Mineral Resources organization chart.*

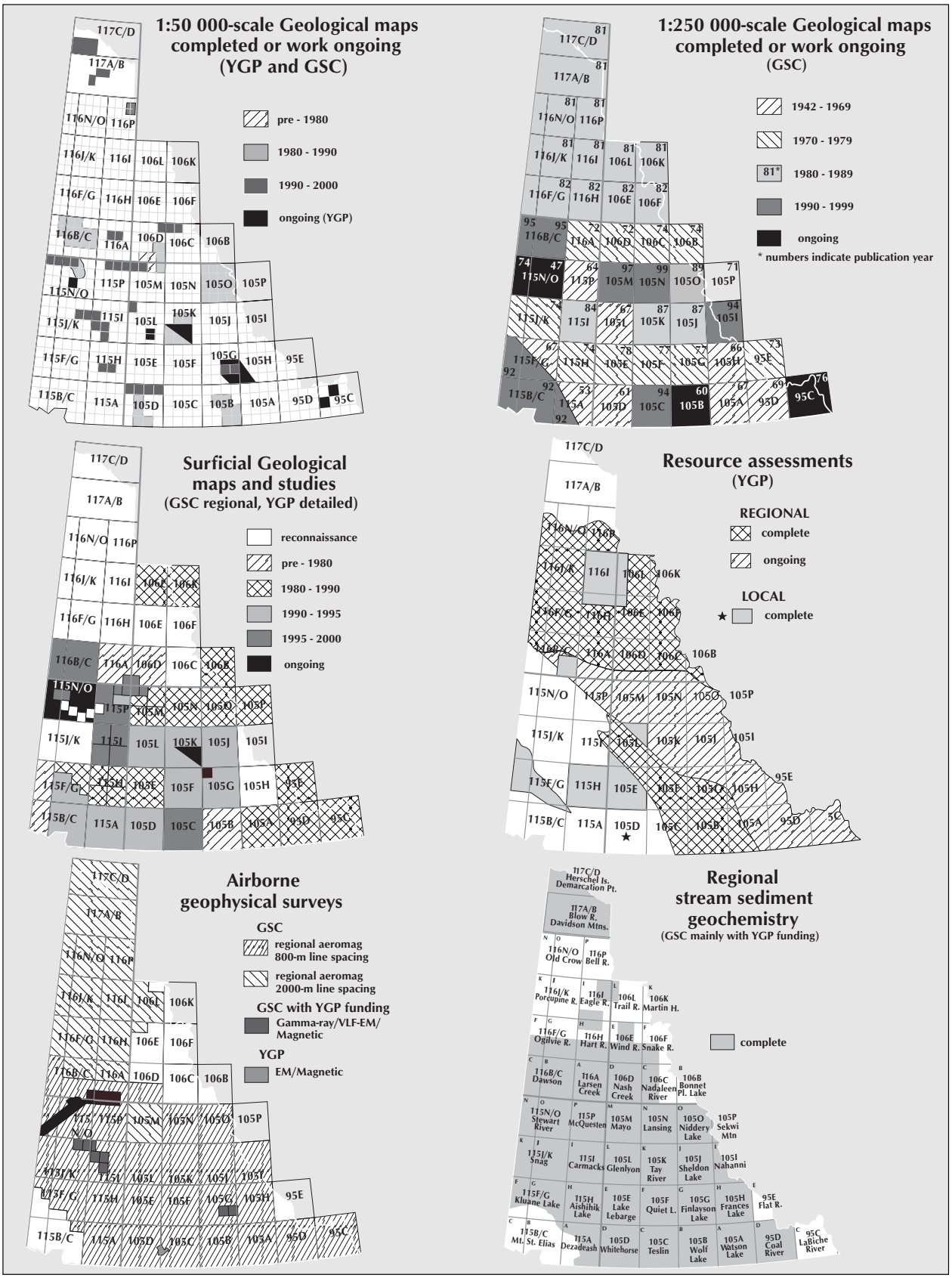

Figure 3. *Summary of available geological maps and regional geochemical and geophysical surveys in the Yukon.*

understand Yukon-Tanana and Kootenay terranes, arguably the least understood parts of the North American Cordillera.

The Yukon Geology Program contribution to NATMAP includes the ongoing work of Don Murphy in the Finlayson Lake massive sulphide district, fieldwork begun last year by Maurice Colpron in the Glenlyon area, mapping by Charlie Roots in the western half of Wolf Lake map area and the northern half of Jennings River map area in B.C. in partnership with Joanne Nelson and Mitch Mihalynuk of the B.C. Geological Survey Branch, and surficial studies by Grant Lowey in the Stewart River map area in conjunction with regional surficial studies by Lionel Jackson of the GSC.

Other parts of the Ancient Pacific Margin NATMAP include bedrock mapping of Stewart River map area in Yukon by Steve Gordey of the GSC, in southern B.C., regional mapping by Bob Thompson of the GSC, and in east-central Alaska, mapping by David Szumigala of the Alaska State Geological Survey, and mineral deposit studies by Cynthia Dusel-Bacon. Participation by numerous university researchers, graduate students and other specialists has greatly added to the depth and complexity of the project. In the Yukon, these include lithogeochemical studies in the Finlayson Lake area by Steve Piercey and Jim Mortensen of the University of British Columbia and mineral deposit studies by Suzanne Paradis of the GSC. Regular workshops and field trips are one of the main benefits of such a large and diverse project. This summer Jim Mortensen led a field trip along the Top of the World Highway, west of Dawson and into Alaska.

This year, the project received a substantial boost through additional funding provided by Natural Resources Canada's Targeted Geoscience Initiative (TGI). The extra funds were used to conduct an airborne multispectral and magnetometer survey across the Yukon-Tanana Terrane in Stewart River map area where bedrock exposure is especially poor. Preliminary approval was also given for TGI funding over the following two years. Plans for 2001 include accelerated regional mapping of Finalyson Lake map area north of the Tintina Fault, a till geochemical survey in the northern portion of the area between the Anvil and the Finlayson Lake massive sulphide districts, as well as additional geophysical surveys in the Stewart River map area. The proposal for 2002 includes accelerated mapping of the Yukon-Tanana portion of Glenlyon and McQuesten map areas and continued geophysical surveys in Stewart River map area. Priorities for the TGI proposal were determined largely from the results of the Second Yukon Geoscience Planning Workshop held in March, 1999 (Yukon Geoscience - Looking to the next Millennium, EGSD Open File 2000-14).

In order to accommodate increasing interest from YTG and industry in hydrocarbon-related geoscience, Tammy Allen and Lee Pigage joined GSC Calgary staff and university researchers on the Central Forelands NATMAP Project in La Biche River map area in southeast Yukon. The three-year project will better define the geologic framework of the area with the highest hydrocarbon potential in all of Yukon.

Another major effort by the Yukon Geology Program is to synthesize and enhance the geological database of the Anvil District. The Faro mine remains closed for the forseeable future, but the possibility remains for renewed exploration and mining at some point. Lee Pigage has completed bedrock mapping and expects to release a complete set of 11 geological compilation maps of the district at 1:25 000 scale by the spring of 2001. Jeff Bond has completed surficial mapping and a till geochemical survey and expects to release 11 final maps and a bulletin in the spring of 2001. Cliff Stanley has completed a lithogeochemical study of the Grizzly deposit, and will release a report later in the year.

Craig Hart continued his studies of Yukon gold occurrences; splitting his time between those related to the Tombstone intrusive suite northeast of the Tintina Fault, and those in the Dawson Range along trend from the Pogo Deposit in Alaska. Craig also assisted some of the students who received support from the YGP to study various aspects of Yukon gold deposits. These included Mark Lindsay and Julian Stephens, under the supervision of Tim Baker at James Cook University and John Mair at University of Western Australia; Erin Marsh and Seth Mueller under the supervision of Rich Goldfarb at the U.S. Geological Survey; and Scott Heffernan and Kelly Eamon under the supervison of Jim Mortensen at the University of British Columbia. Bedrock geology maps of the Dawson Range copper/gold belt, compiled from earlier mapping with the aid of recent geophysical surveys, are expected to be released in the spring of 2001.

Bill LeBarge and Mark Nowasad continued their studies of the relation between sedimentology, grain-size distribution, and water quality of effluent from placer deposits. Data gathered from this study should assist with the review of the Yukon Placer Authorization in 2001. The

bulletin for the Mayo Placer project is expected to be released in the spring of 2001.

Julie Hunt who is now working half time, is nearing completion of her bulletin on Yukon volcanogenic massive sulphide deposits.

Grant Lowey and Darrel Long undertook a sedimentological study of Cretaceous sedimentary rocks near Ross River where dinosaur tracks were recently discovered.

EXTERNAL SUPPORT

Derek Thorkelson at Simon Fraser University continued his research on Proterozoic rocks and mineral deposits in the Wernecke Mountains with a small study of the Bear River dykes.

John Westgate at the University of Toronto continued tephrachronology studies in the Klondike area.

Robert Creaser and Dave Selby at the University of Alberta began a project to determine the feasibility of using Rhenium/Osmium systematics to determine the age of molybdenum in Yukon mineral deposits.

In order to make Regional Stream Geochemical data from the National Geochemical Reconnaissance Program more accessible, Peter Friske with the Geological Survey of Canada in Ottawa was funded to produce a template for display of existing Open File data in pdf format. We expect to begin releasing existing RGS data as pdf files in the new year.

INDUSTRY LIAISON AND SUPPORT

Mike Burke and Bill LeBarge, our main links to the exploration industry, continued to monitor Yukon hard-rock and placer mining and mineral exploration activity, visit active properties, review reports for assessment credit, and maintain the assessment report library.

YUKON MINFILE

Robert Deklerk maintains the Yukon MINFILE, Yukon's mineral occurrence database, which is another mainstay of the Yukon Geology Program. We have completed an upgrade from Microsoft Access Version 2 to Access 97 with major revision and simplification of the database structure. The updated digital version, with data revised to 1998, will be released on CD-ROM in the spring of 2001. New location maps produced in Arcview will accompany the release. The text version of MINFILE is available on our website and in hard copy through Exploration and Geological Services Division.

YUKON GEOPROCESS FILE

The Yukon GEOPROCESS File, under the direction of Diane Emond, is an inventory of information on geological process and terrain hazards, including 1:250 000 scale maps showing permafrost, landslides, recent volcanic rocks, structural geology, and seismic events and also includes references and summaries of bedrock and surficial geology. The GEOPROCESS File is intended as a planning aid for development activities and is available for most areas south of 66° latitude. The maps will soon be available in colour, on a single compact disk (CD).

H.S. BOSTOCK CORE LIBRARY

Mike Burke and Ken Galambos maintain the H.S. Bostock Core Library. The facility contains about 128,000 m of diamond drill core from about 200 Yukon mineral occurrences. Confidentiality of material is determined on the same basis as mineral assessment reports. Confidential core can be viewed with a letter of release from the owner. Rock saws and other rock preparation equipment are available to the public.

MINERAL RESOURCE ASSESSMENTS

The Yukon Mineral Resources Branch is responding to an increasing need for geological and metallogenic information to assist resolution of land use issues and conflicts. Some of the pressures have come from First Nation land claims negotiations, and localized land use conflicts such as one within the city limits of Whitehorse. Another important priority of the Yukon Government is to implement the Yukon Protected Areas Strategy, the goal of which is protection and withdrawal of representative land from industrial activity in all 23 ecoregions in the Yukon. YTG Economic Development intends to provide efficient and cost-effective input into the selection process by undertaking a Yukon-wide mineral potential study. Providing information on mineral potential at a regional scale will assist in guiding the selection of areas of interest, in order to minimize the impact on the access to mineral wealth.

A regional mineral potential exercise was conducted in the spring of 1999 for Northern Yukon, in the winter of 2000 for Cassiar Terrane and eastern Yukon-Tanana

Terrane, and in the fall of 2000 for Selwyn Basin. Expert panels estimated the probability of discovering new mineral deposits in geological tracts. Their estimations were processed through the Monte Carlo simulator and the resulting map displays the relative mineral potential of the tracts. The draft mineral potential maps will be used in the planning of the proposed Arctic Dempster Protected Area Strategy, Wolf Lake National Park, Nordenskiold Habitat Protection Area, and Ddhaw Ghro Special Management Area. The Cassiar Terrane and eastern Yukon-Tanana Terrane project provides a regional context for proposed protected areas within the Teslin Tlingit Council Traditional Territory, one of which is the Wolf Lake federal initiative. The study area covers most of the Traditional Territory and the portions of the Pelly Mountains and Yukon Southern Lakes ecoregions within it. The Selwyn Basin project will be completed by January 2001, and will be key to land claim negotiations and Yukon Protected Areas Strategy initiatives within Kaska Dena (Liard First Nation and Ross River Council) Traditional Territory. Compilation is ongoing for the next regional assessment to address Stikine and Cache Creek terranes. The assessment is planned for spring of 2001.

Field-based mineral deposit model studies were conducted in the Bonnet Plume Lake, Frances Lake, and La Biche River areas.

Due to the ongoing review of the implementation of Yukon Protected Areas Strategy, no detailed mineral resource assessments were conducted in 2000. Geological mapping, prospecting and sampling in anticipation of detailed mineral resource assessments were carried out in the Richardson Mountains, McArthur Range, and Nordenskiold River area.

Staff thoroughly review land claim selections and provide technical information to territorial land claim negotiators. Comments are provided on mineral potential, exploration history, mineral land tenure and access. Staff also updates and distributes the Yukon Land Status Map.

YUKON MINING INCENTIVE PROGRAM

The Yukon Government provides grants for grass roots exploration and initial development of properties. This year a total of $761,800 was distributed to 54 prospectors under the supervision of Ken Galambos.

PUBLICATIONS

The Yukon Geology Program is now converted to fully digital publishing. All geological maps are now printed and new publications are being produced from a digital format, on-demand. This advance will greatly reduce our printing and storage costs. An increasing number of Yukon Geology Program publications are available for download free of charge on our website at www.geology.gov.yk.ca/publications. Yukon Geology Program publications are published by Exploration and Geological Services Division, DIAND and are available at the address below.

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APERÇU

Le Service de géologie du Yukon (fig. 1), qui en est maintenant à sa cinqième année d'existence, est dans les faits la commission géologique du Yukon et consiste en deux bureaux intégrés présentant des structures administratives différentes mais qui sont gérés conjointement (fig.2). Le financement par le fédéral est fourni par l'entremise de la Division des Services d'exploration et de géologie du ministère des Affaires indiennes et du Nord canadien (MAIN), alors que le financement par le territoire et à coûts partagés (GTY/MAIN) est obtenu par l'entremise de la Direction des ressources minérales du ministère de l'Expansion économique (gouvernement du territoire du Yukon (GTY)). La Commission géologique du Canada (CGC) maintient également un bureau auprès du Service.

Le Service de géologie du Yukon est une organisation informelle et temporaire qui sera transformée en commission géologique du Yukon lorsque les responsabilités du Programme des affaires du Nord seront dévolues au GTY. Il y a eu des retards dans les négociations et la date cible de cette dévolution a été devancée d'un an et fixée au premier avril 2002. L'entente de principe concernant le transfert est presque complétée et toutes les parties s'attendent à ce que les négociations soient couronnées de succès.

Le programme de géologie du Yukon compte de nombreuses fonctions dont les principales sont les suivantes : assurer la liaison entre l'industrie minérale et le gouvernement; tenir des bases de données géologiques telles que Yukon MINFILE (gîtes minéraux), Yukon GEOPROCESS FILE (processus géologiques et dangers du terrain) et Yukon Placer MINFILE (gisements placériens : cette base est toujours en cours d'élaboration); tenir un point de vente de cartes et de publications et une carothèque (H.S. Bostock Core Library); et enfin, promouvoir et exécuter de nouvelles recherches géologiques, et en publier les résultats.

La plupart des travaux de recherche géologique sont maintenant exécutés de concert avec des initiatives d'autres agences gouvernementales. Dans le cadre de CARTNAT (programme de cartographie géologique de l'ancienne marge du Pacifique) par exemple, la Commission géologique du Canada, la Direction de la Commission géologique de la Colombie-Britannique et le programme de géologie du Yukon mènent en ce moment un projet multidisciplinaire en vue de mieux comprendre les terranes de Yukon-Tanana et de Kootenay, soit les parties considérées comme les moins bien connues de la cordillère nord-américaine. Ces travaux, qui se déroulent au Yukon et en Colombie-Britannique, comprennent des travaux de cartographie géologique dans le district de Finlayson Lake, dans la région de Glenlyon, dans la région de Wolf Lake et dans la région de Jennings River (dans le nord de la Colombie-Britannique), de même que des travaux de cartographie géologique du socle et des dépôts superficiels dans la région de Stewart River. D'autres études connexes (par exemple sur les gîtes minéraux) menées au Yukon, en Colombie-Britannique et en Alaska par les géologues du programme de géologie du Yukon, des chercheurs universitaires, des étudiants de deuxième et de troisième cycle, et autres spécialistes ont grandement contribué à la valeur scientifique du projet. En outre, on a effectué un levé multispectral et magnétométrique aéroporté du terrane de Yukon-Tanana dans la région de Stewart River où le socle rocheux est très peu exposé.

Des travaux de cartographie géologique dans la région de LaBiche River, une région présentant un potentiel d'hydrocarbures, ont été aussi poursuivi dans le cadre de CARNAT 'Central Forelands'.

Au nombre des autres objectifs majeurs visés par le programme de géologie du Yukon, mentionnons celui consistant à synthétiser et à améliorer la base de données géologiques du district d'Anvil, initiative qui comprend la cartographie géologique du socle rocheux et des dépôts superficiels, et des levés géochimiques de till, en plus de l'étude des gites minéraux. Les indices aurifères du Yukon sont aussi à l'étude, l'attention portant sur ceux assoçiés à la suite intrusive de Tombstone au nord-est de la faille de Tintina et sur ceux de la chaîne de Dawson, qui sont en ligne avec le gisement de Pogo en Alaska. Les études se poursuivent dans le domaine des placers, l'intérêt portant sur la relation entre la sédimentologie, la répartition granulométrique et la qualité de l'eau des effluents provenant des dépôts placériens. Une étude sédimentologique a aussi été menée dans des roches sédimentaires du Crétacé près de Ross River, dans une région où l'on a récemment découvert des pistes de dinosaures.

La Direction générale des Ressources minérales du gouvernement du Yukon répond actuellement à un besoin croissant d'information dans les domaines de la géologie et de la métallogénie, aux fins du règlement des questions et des conflits relatifs à l'aménagement du territoire, notamment la Stratégie des zones protégées du

Yukon. Le but de cette dernière est de réserver des terres représentatives pour les protéger de toute activité industrielle dans les 23 écorégions du Yukon. Le ministère du Développement économique du Yukon a annoncé une participation efficace et rentable au processus de sélection en entreprenant une étude du potentiel minéral de l'ensemble du territoire. Le programme de géologie du Yukon joue un rôle proactif en fournissant de l'information et des études sur le potentiel minéral à l'échelle régionale, afin de faciliter la sélection des sites d'intérêt et de minimiser ainsi l'impact sur l'accès aux richesses minérales.

Le gouvernement du Yukon accorde des subventions de prospection et de développement initial, dans le cadre du Programme d'encouragement pour l'exploitation minérale du Yukon. On a attribué cette année un total de 761 000 $ à 54 prospecteurs.

Les publications du programme de géologie du Yukon sont diffusées par la Division des services géologiques et d'exploration (MAINC). Un nombre croissant de publications du programme de géologie du Yukon sont aussi disponibles sans frais à : www.geology.gov.yk.ca. Tous les publications sont disponible à l'addresse suivante :

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Affaires indiennes et du Nord canadien
300 rue Main-bur.102
Whitehorse (Yukon) Y1A 2B5
Téléphone : (867) 667-3266
Courriel : geosales@inac.gc.ca

Pour en savoir plus long sur le Programme d'études géologiques du Yukon, visitez notre page d'accueil à http://www.geology.gov.yk.ca ou communiquez directement avec :

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APPENDIX 1: RECENT PUBLICATIONS

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Thorkelson, D.J., 2000. Geology and mineral occurrences of the Slats Creek, Fairchild Lake and "Dolores Creek" areas, Wernecke Mountains (106D/16, 106C/13, 106C/14), Yukon Territory; Bulletin 10, three accompanying maps (1:50 000 scale).

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Bond, J.D., 2000. Surficial geological map and till geochemistry of Weasel Lake (105G/13), central Yukon (1:50 000 scale); Open File 2000-9.

Colpron, M., 2000. Geological map of Little Salmon Lake (parts of 105L/1, 2 & 7), central Yukon (1:50 000 scale); Open File 2000-10.

Hunt, J.A, Abbott, J.G and Hart, C.J.R., 2000. Preliminary metallogenic maps of Yukon (25 pages); Open File 2000-1.

Murphy, D.C., 2000. Preliminary geological map of part of the Klatsa River area (105H/3), southeastern Yukon (1:50 000 scale); Open File 2000-15.

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Pigage, L.C., 2000. Geological map of Blind Creek (105K/7 SW), central Yukon (1:25 000 scale); Open File 2000-8.

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Goldfarb, R., **Hart, C.**, Miller, M., Miller, L., Farmer, G.L. and Groves, D., 2000. The Tintina gold belt: A global perspective. *In:* The Tintina Gold Belt: Concepts, Exploration and Discoveries, British Columbia and Yukon Chamber of Mines, Special Volume 2, p. 5-34.

Hart, C.J.R., Baker, T. and **Burke, M.**, 2000. New exploration concepts for country-rock hosted, intrusion-related gold systems, Tintina gold belt in Yukon. *In:* The Tintina Gold Belt: Concepts, Exploration and Discoveries, British Columbia and Yukon Chamber of Mines, Special Volume 2, p. 145-172.

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Harms, T.A., 2000. Proposed terrane affinities of pericratonic assemblages in northern British Columbia and southern Yukon, Canada. Geological Society of America Cordilleran Section Abstracts with Programs, vol. 32, No. 6, p. A17.

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Microbial Technologies, 2000. Biological Detoxification of Cyanide in Northern Environments; MERG Open File 2000-1.

Mougeot Geoanalysis and Withers, S., 2000. Assessment of Long-term Vegetation and Site Conditions at Reclaimed Yukon Mineral Exploration; MERG Open File 2000-2.

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Mann, W.D., 2000. Adit Ice Plug Prevention; MERG Open File 2000-4.

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Yukon Mining Incentives Program Overview, 2000

Ken Galambos[1]
Mineral Resources Branch, Yukon Government

Galambos, K., 2001. Yukon Mining Incentives Program Overview, 2000. *In:* Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 47-48.

Ninety applications were received by the program deadline of March 1, 2000. In an attempt to fund as many of the excellent proposals as possible, the Department of Economic Development, Yukon Government, added an extra $250,000 to the Yukon Mining Incentives Program (YMIP) contribution budget of $378,000. This increase in funding allowed the program to offer $761,800 to 54 applicants.

Approximately 75% of the successful projects contained a precious metal component, with 10% focussing on platinum group exploration (PGE). Those projects targeting gold, generally concentrated their exploration efforts near mid-Cretaceous intrusions within the Tintina gold belt. PGE exploration generally targeted the Kluane mafic-ultramafic belt in southwest Yukon.

Base metals exploration accounted for the remaining 25% of programs. Volcanogenic massive sulphide targets in the Yukon-Tanana Terrane were the focus of most of these exploration programs. The search for the porphyry source of skarn mineralization in the Whitehorse Copper Belt was also the target of a number of grassroots exploration and drill programs.

Highlights for the year include second-stage grassroots and initial drill programs on three base metals properties.

Kluane Drilling Ltd. drilled two holes on Rob Hamel's Hat property, located immediately north of the historic War Eagle pit in the Whitehorse Copper Belt. Drill hole HT-1 intersected 10.55 m of well mineralized skarn averaging 4.99% copper, 1.05 g/t gold and 40.28 g/t silver at a depth of 124.4 m (Fig. 1). Numerous other 1- to 1.2-m-wide intersections returned values from 1.44% to 7.22% copper. VLF-EM and I.P. anomalies suggest a possible 300-m-long extension to this zone. Trenches and mineralized float samples indicate that a porphyry copper-gold deposit may also exist on the property.

Pamicon Developments Ltd. conducted an extensive soil sampling and mapping program in the Bear Paw breccia area of the Clear Creek property, which is currently under

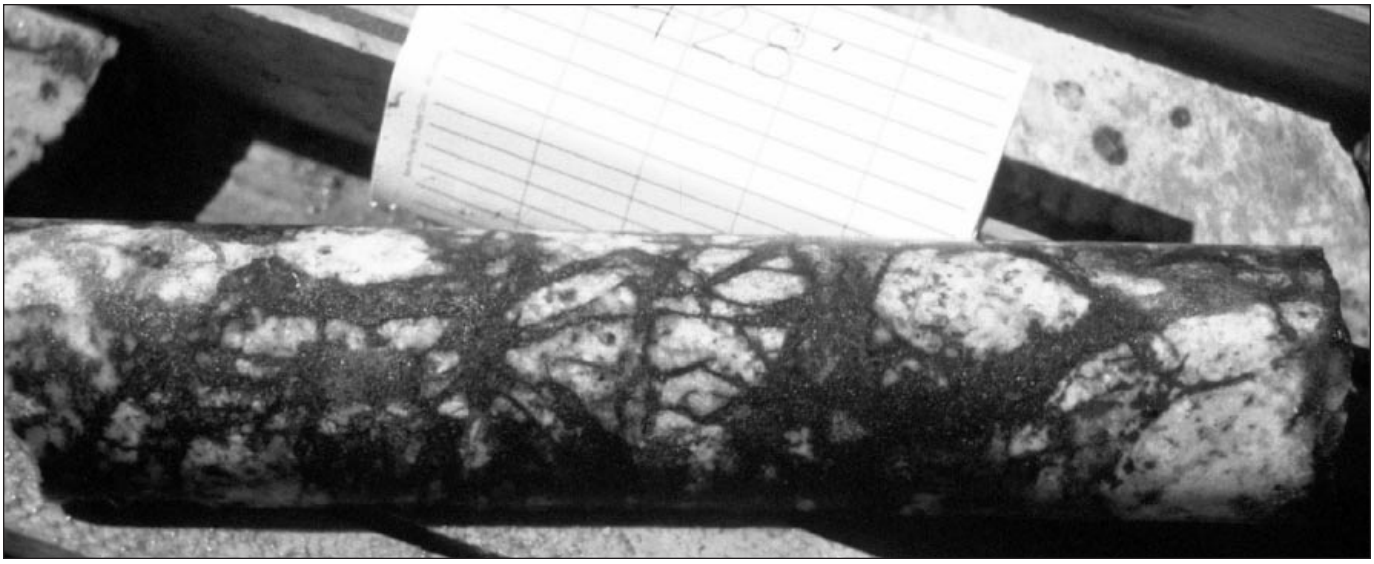

Figure 1. *Bornite mineralization cementing intrusive rock fragments in drill hole HT-1 on the Hat property. This interval assayed 11.25% copper and 1.92 g/t gold over 0.76 m.*

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option to Redstar Resources Corporation. This program lead to the core drilling of nine holes. Highlights were 71.5 m of 1.32 g/t gold, including 34.85 m of 2.00 g/t in hole BP00-03; 21.0 m of 1.00 g/t gold, including 6.3 m of 2.13 g/t gold in hole BP00-08; and 31.81 m of 2.30 g/t gold, including 18.31 m of 3.73 g/t in BP00-10 (Fig. 2).

Tanana Exploration identified two main zones of mineralization on their Fox property, southwest of Ross River. Detailed prospecting and sampling in the Avalanche Ridge area revealed a 200 m x 300 m area of mineralized float, some of which returned combined zinc-lead values in excess of 25%. The Ram zone has been identified as one source of the large mineralized float boulders found in Brie Creek (Fig. 3). Elevated zinc-lead-silver values are reported over widths of up to 5 m. More quartz-rich zones often assay >1% copper with anomalous gold. High-grade vein and fracture filling mineralization in the area returned values from 1.26 to 20.2 g/t gold.

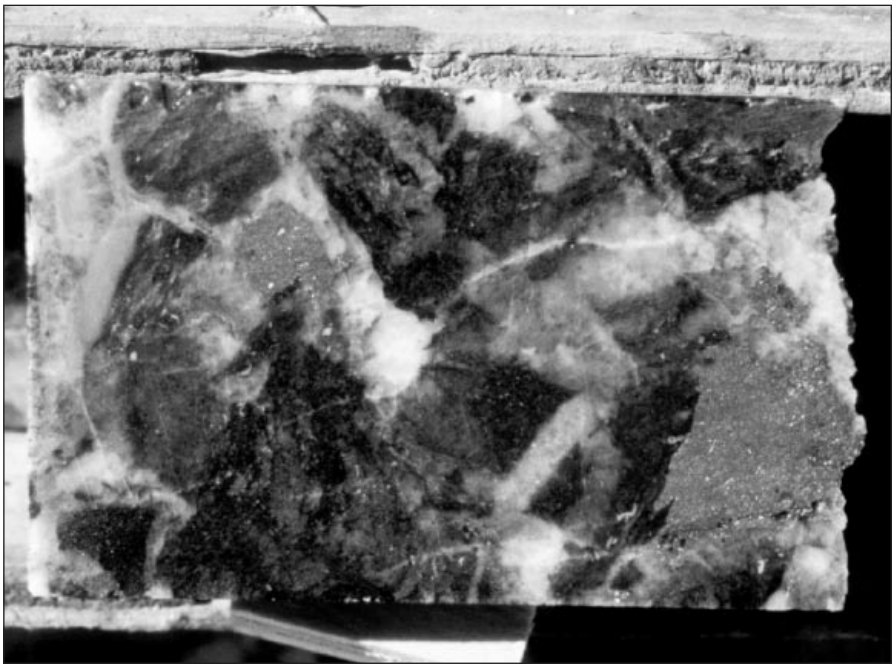

Figure 2. *Typical gold-bearing quartz-breccia mineralization from this year's drilling at Clear Creek. Photo by M. Burke.*

Figure 3. *Copper-rich mineralization in outcrop at the Ram zone. Photo by M. Burke.*

Robert E. Leckie Awards for Outstanding Reclamation Practices

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Mining Land Use Division, Indian and Northern Affairs Canada

Pelletier, K., 2001. Robert E. Leckie Awards for Outstanding Reclamation Practices. *In:* Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 49-50.

The Robert E. Leckie Awards for outstanding reclamation practices in the Yukon, both for quartz and placer exploration or mining, were first established in November, 1999. The two awards are given for reclamation and site restoration efforts that go well beyond what is required by law, either by reclaiming land for which there is no obligation to reclaim, adding features to the land that have enhanced the area and local community, or returning mined land to a condition that is not only physically sound but aesthetically pleasing. The awards were named after the late Robert (Bob) Leckie, a former mining inspector for Indian and Northern Affairs Canada, who passed away in November, 1999 (see Yukon Exploration and Geology 1999).

The 2000 Robert E. Leckie Award for Outstanding Reclamation Practices in Quartz Exploration and Mining goes to Cash Resources Ltd. The company has been active in the Yukon since 1985 and has long been recognized as a leader in environmental stewardship and in community involvement. The company has continuously contributed to the knowledge base regarding successful reclamation methods in the north through hosting site visits and giving presentations at reclamation workshops.

Figure 1. *Walking a backhoe across the tundra to the Killer Gold property, Killerman Lake area.*

Cash Resources Ltd. is recognized for using exceptional operational and restoration procedures during the Killer Gold exploration project near Killerman Lake in 1995. This was prior to being required to do so by the Yukon Mining Land Use Regulations which came into effect in 1998. Killerman Lake is located approximately 45 km northwest of Haines Junction and the Kluane National Park.

From the onset of the project, local First Nations were involved in the planning and implementation stages. Access was achieved by walking the backhoe over a tundra landscape for a distance of 26 km while leaving a minimal trace (Fig. 1). The timing of the project was designed to specifically avoid conflicts with sheep lambing, caribou migration and the local outfitter. In addition, the company co-funded a study with the Yukon Government on the effects of mineral exploration activities in areas of sheep habitat. During the exploration activity, drill pads were constructed by hand, the drill was moved by helicopter to minimize ground disturbance, and drill moves were scheduled to avoid bedding times for local sheep. Trenches were buried as soon as sampling was completed, and natural re-vegetation has been successful in the challenging tundra environment.

Grew Creek Ventures Ltd. is the recipient of the 2000 Award for Outstanding Placer Mining Reclamation Practices. When Dave Marsters of Grew Creek Ventures Ltd. moved to Hunker Creek in 1998, the ground he occupied had previously been extensively mined since the turn of the century, but had never been reclaimed. Tailings from dredging and small-scale bulldozer mining, as well as old equipment and waste oil products, were found everywhere. In 1999 and 2000, the company accomplished 1.2 km of excellent restoration work, reclaiming disturbances from current mining activities as well as all previous mining activities. All tailings from the current and past operations were levelled, contoured and covered with 'black muck' to insure rapid natural re-vegetation (Fig. 2). Stream restoration at the site is exceptional and was accomplished well beyond the requirement by permit conditions. Small isolated ponds were created to enhance local habitat.

Congratulations to Cash Resources Ltd. and Grew Creek Ventures Ltd., the 2000 recipients of the Robert E. Leckie Reclamation Awards in the Yukon.

Figure 2. *Contoured tailings at Hunker Creek are covered with 'black muck' to enhance natural revegetation.*