

GOVERNMENT

Yukon Geological Survey

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Yukon Geological Survey

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Grant Abbott

RETIREMENT

In this 2007 edition of Yukon Exploration and Geology, we would like to make special mention of Grant Abbott, who will retire as the Director of the Yukon Geological Survey (YGS) in 2008. Grant's unwavering professionalism and dedication to excellence has been a hallmark of Yukon geology for more than 30 years.

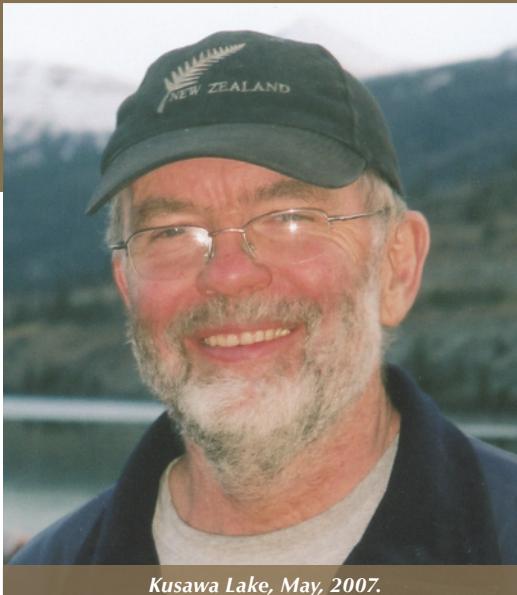
Grant graduated from the University of British Columbia in 1971 with a BSc in Geological Engineering, followed by a MSc in Geological Engineering from Queen's University in 1977. He wrote his MSc thesis on the structure and



Grant (left) with running and geology buddies, Dirk Tempelman-Kluit and Charlie Roots, Midnight Dome, 1980.

stratigraphy of the Mt. Hundere silver-lead-zinc property, which later became the Sa Dena Hes mine near Watson Lake. Since 1970, his career as a geologist has largely been spent in the Yukon, first as a student when he worked for Archer, Cathro and the Geological Survey of Canada, and subsequently as an exploration geologist for Archer, Cathro. Grant is widely credited for his part in the discovery of the Williams Creek copper deposit near Carmacks.

Grant moved to Whitehorse in 1980 and joined the Exploration and Geological Services Division, Northern Affairs Program, Department of Indian Affairs and Northern Development as a project geologist. He undertook regional mapping and



Kusawa Lake, May, 2007.

metallogenetic studies throughout the Yukon. For the last decade Grant has been Chief Geologist for the YGS and its predecessor, the Yukon Geology Program.

During his career, Grant conferred with exploration geologists and prospectors, collected key samples and wrote germane articles that elucidated Yukon's geology. As a manager, he has skillfully led the Yukon Geological Survey, always soliciting advice before making decisions.

The staff of YGS, and Grant's colleagues in Yukon's Department of Energy, Mines and Resources, wish him the very best as he begins another of life's chapters, with a rock hammer in one hand and an airplane ticket in the other.



Skiing in the Yukon, 1982.

Yukon Geological Survey

Grant Abbott¹ and staff

Abbott, J.G. and staff, 2008. Yukon Geological Survey. In: Yukon Exploration and Geology 2007, D.S. Emond, L.R. Blackburn, R.P. Hill and L.H. Weston (eds.), Yukon Geological Survey, p 63-79.

OVERVIEW

The Yukon Geological Survey (YGS, Fig. 1) is rebounding from a difficult period in 2006 and is rebuilding with a number of personnel changes (Fig. 2). It is a pleasure to welcome Robert Deklerk back to the Mineral Services unit after his successful recovery from cancer. Ken Galambos is also back after a time with Economic Development. Ken has switched places with Steve Traynor to work on MINFILE alongside Rob while Steve takes over the Yukon Mining Incentives Program (YMIP). Mineral Services was also given a big boost from Lauren Blackburn and Catherine Welsh who are on temporary assignments. Our Map Sales desk is also in transition after the retirement of Ali Wagner last spring with Kim Murray temporarily filling in. Our GIS capacity was also given a boost with the addition of Aubrey Sicotte in a permanent position, and Bailey Staffen for the year. We were unable to recruit a project geologist and mineral assessment geologist in 2007, but are optimistic that these



Figure 1. Yukon Geological Survey staff from left to right: Olwyn Bruce, Karen Pelletier, Tiffani Fraser, Don Murphy, Lee Pigage, Bailey Staffen, Charlie Roots, Grant Abbott, Steve Israel, Diane Emond, Ken Galambos, Lara Lewis, Maurice Colpron, Leyla Weston, Kim Murray, Tammy Allen, Jeff Bond, Carrie Labonte, Aubrey Sicotte, Panya Lipovsky, Lauren Blackburn, Grant Lowey, Steve Traynor, Catherine Welsh, Mike Burke, Rod Hill, Robert Deklerk and Bill LeBarge.

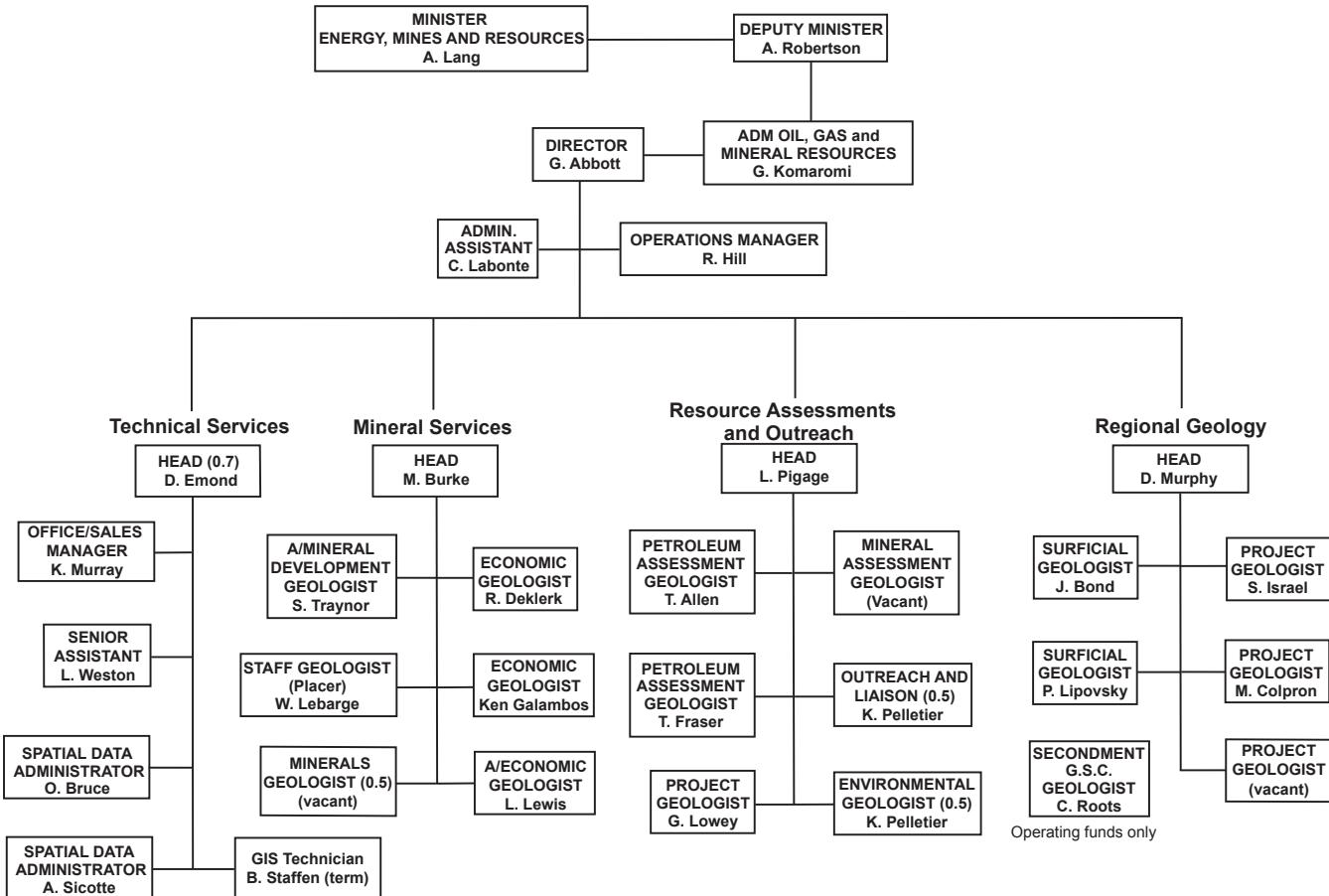


Figure 2. Yukon Geological Survey organization chart.

positions will be filled in 2008. Finally we are pleased to welcome Dr. Carolyn Relf as incoming Director behind Grant Abbott who is retiring in the spring. Carolyn comes to the position with an exemplary record as a scientist and manager, and we look forward to her leadership.

The Technical Liaison Committee to YGS reviews our program twice a year. We are grateful to Chair, Gerry Carlson and members Carmel Lowe, Jim Mortensen, Al Doherty, Rob Carne, Jean Pautler, Forest Pearson, Shawn Ryan and Jim Christie for their valuable support and constructive advice.

CURRENT PROJECTS

YGS continues to benefit from stable funding from the Government of Yukon; and Indian and Northern Affairs Canada (DIAND) funding programs such as SINED (Strategic Investments in Northern Economic Development). This has enabled the Yukon Geological Survey to undertake a wide range of projects that fulfill

our mandate to provide the geoscience information needed to support the sustainable development of Yukon's non-renewable resources. Capacity constraints within YGS, the Geological Survey of Canada (GSC), universities and among geophysical contractors impeded our ability to undertake some projects and slowed others. For example, some promising mineral deposits studies could not proceed because of difficulty in attracting students and researchers. Regardless, we managed to carry out or fund over 24 field projects (Fig. 3), including bedrock and surficial mapping; mineral deposit, placer, hydrocarbon-related, surficial and topical studies; geophysical surveys; and outreach. We are partnering with GSC on many projects and are also supporting the research of a number of graduate students. Much of this work is put into context in Figure 4, which summarizes the coverage for bedrock mapping, surficial mapping, regional stream sediment and till geochemical surveys, and geophysical surveys for the Yukon.

BEDROCK MAPPING

1. Don Murphy is leading the multidisciplinary project to study the poorly exposed and little known Windy-McKinley terrane in the Stevenson Ridge map area of southwest Yukon. The project is a partnership with GSC, and benefited greatly from the participation of Cees van Staal. A significant proportion of funding was provided by SINED. The project also included a surficial mapping component lead by Jeff Bond. Initial reinterpretation of the regional geology indicates that the area may have significant mineral potential that has gone unrecognized. A high-resolution multispectral (magnetics, radiometrics, VLF) or versatile time-domain electromagnetic (VTEM) airborne geophysical survey planned for next year is expected to shed more light on these enigmatic rocks.

2. Steve Israel completed his mapping in the western part of the Kluane Ranges where magmatic nickel-copper-PGE (platinum group elements) targets such as Canalask are the focus of industry attention. Steve has made significant progress in unraveling the complex tectonic history of Wrangellia that includes Triassic extension, Cretaceous compression and younger transcurrent movement that continues to the present. Studies of recent deformation associated with the Denali fault are also taking place in collaboration with Don Murphy (YGS) and workers from the United States Geological Survey in Alaska.

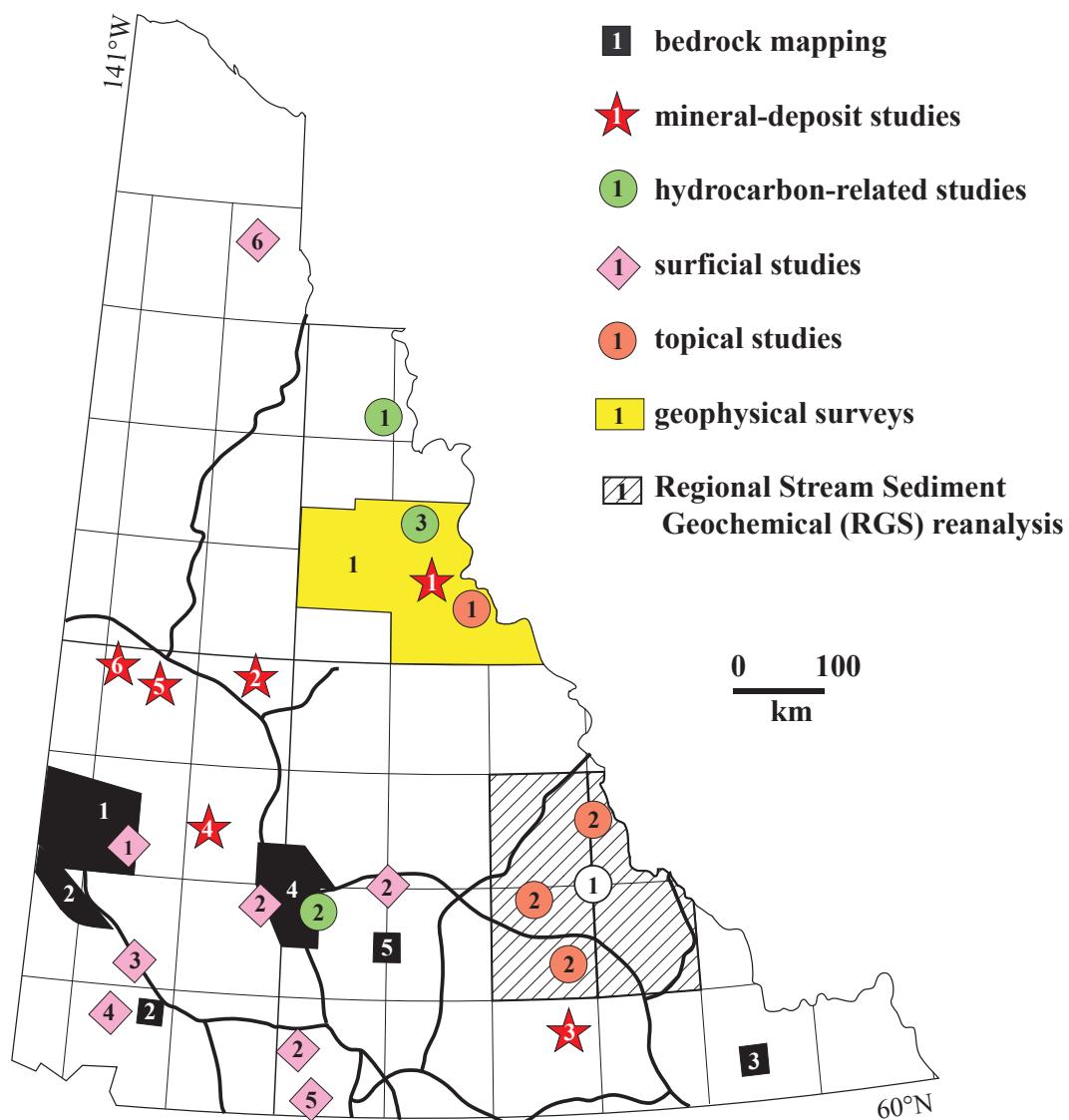


Figure 3. Field projects carried out or sponsored by the Yukon Geological Survey in 2007.

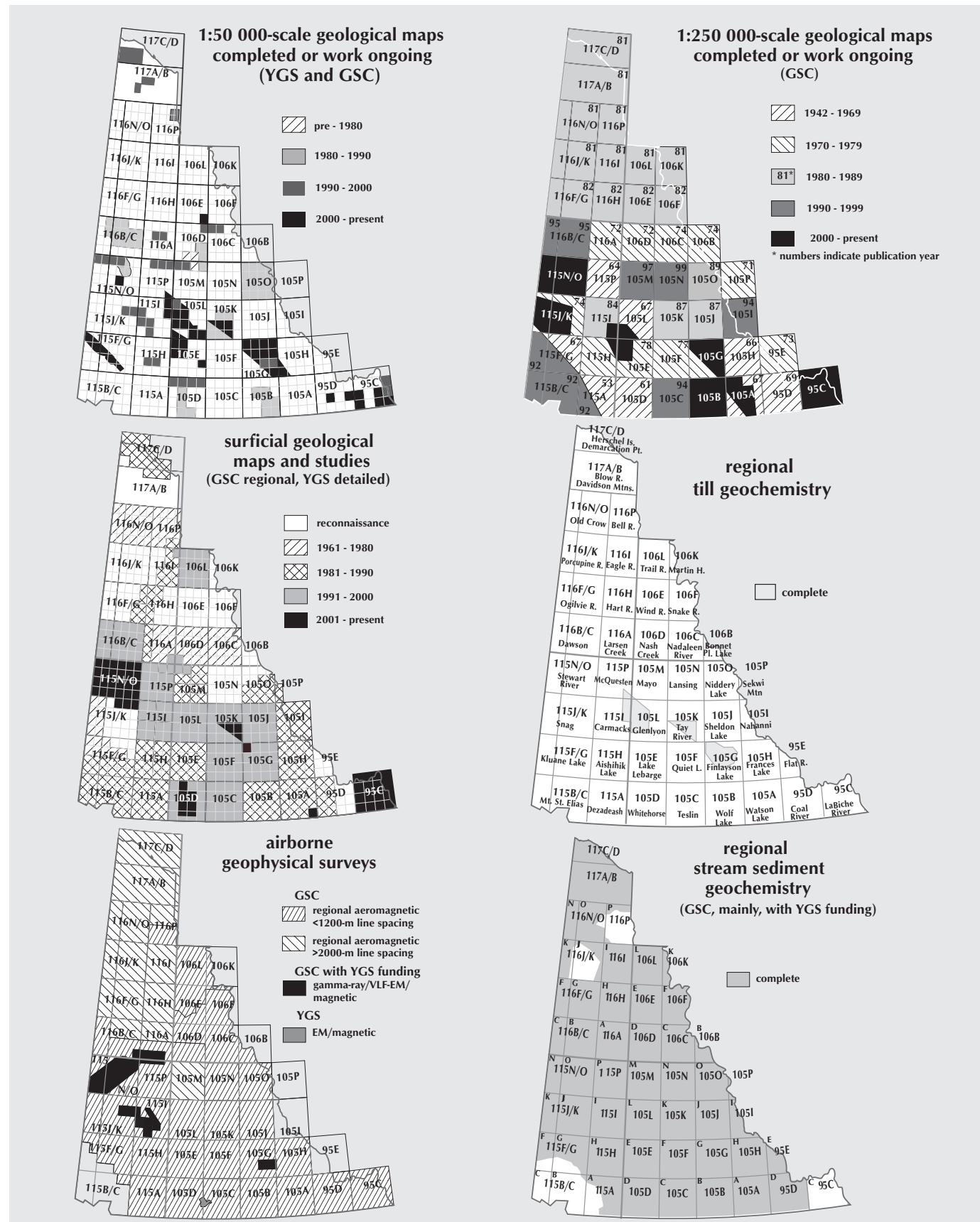


Figure 4. Summary of available geological maps, and regional geochemical and geophysical surveys in the Yukon.

- 3. Lee Pigage** completed the Otter Creek bedrock geology mapping project in southeast Yukon. This work aims to improve the understanding of the regional geology along the south edge of Selwyn basin. This region contains some of the world's largest zinc/lead deposits including Howards Pass and Faro. The epigenetic Mel barite/lead/zinc deposit is located in the Otter Creek map area. The southeastern portion has significant potential for both sedimentary-exhalative (SEDEX) and epigenetic lead-zinc deposits but remains underexplored because of the lack of outcrop. Lee's work has resulted in significant revisions to the stratigraphic and structural framework of the area that should help to focus future exploration.
- 4. Maurice Colpron** partnered with **Grant Lowey**, Don White and Steve Gordey of GSC, and Steve Piercy of Laurentian University to complete a new compilation map and synthesis of the north end of the Whitehorse trough. This work integrates surface mapping with the seismic surveys acquired in 2004. The work demonstrates that the Whitehorse trough is a west-verging fold and thrust belt. This reinterpretation has implications for the hydrocarbon potential of the Whitehorse trough and will form the basis for an assessment of this basin planned for 2008.
- 5. Elizabeth Westberg** began a detailed bedrock mapping project in eastern Laberge and western Quiet Lake map areas as part of her M.Sc. thesis supervised by **M. Colpron** and **Dr. H.D. Gibson** through Simon Fraser University. Her study will help constrain the nature and location of the boundary between Yukon-Tanana and Cassiar terranes, and the timing and conditions of deformation and metamorphism in this region. This project will contribute to refining the geoscience database in a region prospective for gold, tungsten and base metals.
- 3. Kirsten Rasmussen** began a PhD thesis under the supervision of **Dr. Jim Mortensen** at University of British Columbia (UBC) which will help wrap up 15 years of research into Cretaceous magmatism in the Yukon and adjacent portions of southwestern Northwest Territories and eastern Alaska by researchers from YGS and the Mineral Deposits Research Unit. During the two-year study, the research data will be brought into the new YGS Igneous Database, and all existing U-Pb age determinations will be finalized and major gaps in both crystallization age and lithogeochemical data will be filled. Comprehensive models will be constructed to explain the evolution of Cretaceous magmatism, and the project will investigate the influence of pre-existing crustal geometry (i.e., 'lower-plate' vs. 'upper plate') during crustal shortening and melting.
- 4. Thierry Betsi**, under the supervision of **Dr. David Lentz** at the University of New Brunswick, began Doctoral research on gold occurrences in the southern part of the Dawson Range Mineral Belt. There and elsewhere in the northern Cordillera, there appears to be a close link between Cretaceous magmatism and base- and precious-metal mineralization. They hope to formulate more robust applied exploration criteria for the region by narrowing down the specific timing and regional to local controls on precious metal mineralization.
- 5. William LeBarge** continued his partnership with **Professor Vladimir Naumov** and graduate students Ilya Mukhanov, Vitalii Bryukhov and Sergei Gubin from Perm University to study both recent and paleoplacers along the Indian River south of Dawson. Their intention is to investigate the placer gold concentration and fine gold potential of low- to high-level alluvial terraces on the Indian River and to relate this information to a definitive stratigraphic framework. New interpretations of geology and data from this study may help to identify and locate undiscovered bedrock sources of gold, as well as new placer deposits in nearby drainages of unglaciated western Yukon. A complementary study with **Dr. Jim Mortensen** at UBC is using gold geochemistry to investigate the relationship between placer gold and bedrock gold, including possible paleoplacers such as the McKinnon Creek conglomerate.

MINERAL-DEPOSIT STUDIES

1. **Lara Lewis** continued to gather data on intrusion-related and Wernecke Breccia uranium occurrences for a compilation on uranium exploration in Yukon. New age-dates for uranium mineralization are expected to provide constraints on timing of the mineralizing events.
2. **Jake Hanley** under the supervision of **Dr. E. Spooner** at the University of Toronto is completing a post-doctoral study of the evolution and generation of magmatic fluids in mid-Cretaceous granites in Yukon and their relationship to gold mineralization.

6. William LeBarge and Dr. Yana Fedortchouk conducted a pilot program to explore the potential for alluvial diamonds in Yukon. They are visiting selected localities where diamonds have been reported, collecting samples for analyses and consulting with world class diamond experts including Dr. Valentin Afanasiev from the Russian Academy of Sciences in Novosibirsk, Russia. The samples are being processed and studied at the Earth Sciences Department of Dalhousie University for the presence of minerals that accompany diamonds in mature placer deposits.

HYDROCARBON-RELATED STUDIES

1. Tammy Allen and Tiffani Fraser are in the second year of a four-year project to assess the hydrocarbon potential of the Peel Region in northeastern Yukon. The study involves collaboration with GSC, NTGO (Northwest Territories Geoscience Office), industry and university affiliates. The program includes detailed sedimentological fieldwork, laboratory analyses, and subsurface analysis of existing well-log and seismic-reflection data. Tammy and Tiffani are focusing on the hydrocarbon potential of Upper Paleozoic units including the Canol, Imperial and Tuttle formations, among others. They are looking for source rock and reservoir potential from these units, and will be using these data to update the Government of Yukon's Petroleum Resource Assessment for the region.

2,3. Grant Lowey completed fieldwork for his three-year study of the sedimentology, stratigraphy and hydrocarbon potential of the Laberge Group in the Whitehorse trough between Whitehorse and Carmacks. The project will conclude in 2008 with a revised assessment of the hydrocarbon potential of the trough. Grant also undertook a reconnaissance assessment of the Bonnet Plume basin in northern Yukon in anticipation of a longer term study. The basin contains several large thermal coal deposits. This work will provide new information that will help to better assess the coal and gas potential of the basin.

SURFICIAL GEOLOGY MAPPING AND STUDIES

Terrain destabilization related to landslides and permafrost degradation have become a major concern in Yukon in recent years, driven by uncertainty surrounding the distribution and nature of permafrost and the effects of climate change. The influence of climate change on the occurrence of forest fires, glacial retreat and permafrost degradation is of prime importance to terrain stability. YGS is continuing efforts to characterize these issues in order to support impending development, infrastructure maintenance and land-use planning within communities and along infrastructure corridors.

1. Jeff Bond and Panya Lipovsky began mapping the surficial geology of the last unmapped part of southwest Yukon in Stevenson Ridge and northeast Kluane Lake map areas (NTS 115J and G). The area straddles the all-time limit of Pleistocene glaciation originating from the St. Elias Mountains. Multiple glacial limits are preserved and glacial deposits from early to middle Pleistocene local ice cap complexes are present. The area has excellent potential for the preservation of complex Quaternary stratigraphy and this mapping can significantly increase our understanding of Yukon's recent glacial history. The combination of favourable bedrock geology and large areas of unglaciated terrain make this region prospective for new placer discoveries. It also covers one of the proposed routes for a possible railway, which increases the need for surficial mapping as a base for engineering and feasibility studies.

2. Panya Lipovsky has recently studied the distribution, geomorphology and potential impacts of various terrain hazards in southern and central Yukon, using a wide variety of techniques, including detailed field-based geomorphological studies, regional landslide inventories, two-dimensional resistivity geophysical surveys, differential GPS surveys, and Interferometric Synthetic Aperture (InSAR) analysis. Panya is continuing to monitor active permafrost-related failures near Carmacks and Little Salmon Lake. Panya is also assisting Yukon Parks to implement a system for monitoring landslide hazards within the drainage basin located upstream of the Kusawa Lake campground.

3. A large volume of permafrost and surficial geology information (stratigraphy, texture, and ice character and content) exists in borehole logs drilled along the Alaska Highway and the proposed pipeline route over the last 30 years. **Panya Lipovsky** has been compiling this information in a borehole database which so far contains records from over 5000 boreholes drilled along the Alaska Highway between Beaver Creek and Haines Junction. This year, **Megan James**, a M.Sc. student with **Dr. Antoni Lewkowicz** at the University of Ottawa, will continue compiling borehole data from southeastern Yukon in order to analyse recent permafrost changes in the area. This digital GIS-compatible database will be extremely useful for a variety of planning purposes within the corridor, including predicting thaw settlement sensitivity and mapping the distribution of permafrost within the Alaska Highway corridor in greater detail than currently exists.

4. A large rock and ice avalanche occurred on the north face of Mount Steele, southwest Yukon Territory, on July 24, 2007. The ice and rock traveled nearly 6 km, with a vertical descent of over 2150 m, leaving a 3.66 km² deposit on the Steele Glacier. This was one of the largest landslides onto glaciers in the Canadian Cordillera since 1899. **Panya Lipovsky** has been working with a team of scientists from across Canada and the US to investigate the landslide using reconnaissance field studies, analysis of seismic records and an airborne Light Detection and Ranging (LIDAR) survey.

5. **Amber Church** began a study in the Wheaton valley southwest of Whitehorse for her M.Sc. thesis under the direction of **Dr. John Clague** at Simon Fraser University. This project sets out to address a series of questions pertaining to late Holocene glacial history and landscape change in the Wheaton River valley. Amber's thesis will primarily focus on the paraglacial-related mass wasting history in the upper reaches of the drainage. This information will help guide future land-use planning in recently deglaciated drainages of southern Yukon and northern British Columbia.

6. **Kristen Kennedy** began a project in the Eagle Plains area of northern Yukon for her M.Sc. thesis at the University of Alberta under the direction of **Dr. Duane Froese**. Regional mapping and stratigraphic and sedimentological studies are being carried out on the surficial materials with the intent to develop a process-based model of flood-channel development for the Eagle meltwater channel. This is a feature related to the late stages of the last continental glaciation (Laurentide); the channel is one of the few places in the area where aggregate resources are known. Aggregate resources are scarce in the area and the studies will help to identify construction materials necessary for part of development of oil and gas resources.

TOPICAL (SPECIALIZED) STUDIES

1. **Francesca Furlanetto** began her M.Sc. thesis research in the Wernecke Mountains at under the direction of **Dr. Derek Thorkelson** at Simon Fraser University. She will examine the age of the detrital minerals of the Wernecke Supergroup and compare the data to published results from other formations of approximately the same age in Canada and other continents. This new information on the Wernecke Supergroup should clarify the geological setting of many mineral occurrences in northern Yukon.

2. **Luke Beranek**, a PhD candidate at the University of British Columbia under the supervision of **Dr. Jim Mortensen**, has been steadily adding to the detrital-zircon age database for Late Paleozoic and Triassic rocks on both sides of the boundary between the North American continental margin sequence and Slide Mountain and Yukon-Tanana terranes. Luke's earlier work has shown that the terranes were already shedding debris onto North America by the Early Triassic, substantially earlier than previously thought. This work is changing our understanding of how and when these terranes formed and collided with one another.

AIRBORNE GEOPHYSICAL SURVEYS

1. **GSC** in collaboration with **YGS** completed an extensive aeromagnetic survey in the Wernecke and Mackenzie mountains that was begun in 2006. Results will be published in early 2008. Funding was provided by DIAND under the SINED program.

REGIONAL STREAM GEOCHEMISTRY

1. Regional stream geochemical coverage of the Yukon is nearing completion, with two areas with low mineral potential remaining outside of parks (Fig. 4). With SINED funding, YGS and GSC are now beginning to reanalyse samples from previous surveys using modern analytical methods. Eventually, data from key areas will be brought to a consistent standard to allow evaluation of data across large areas. Results from NTS map sheets 105G and 105J will be released in early 2008, and from map sheets 105H and 105I later in the year.

LIAISON TO INDUSTRY, FIRST NATIONS AND THE PUBLIC

YGS recognizes the importance of effectively communicating information on the geology and mineral and energy resources of the Yukon to a broad audience that includes industry, resource managers, First Nations and the general public. We are continuing to focus more attention on developing strategies and products that meet these needs.

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. This year, in order to respond to extraordinary levels of exploration, Lara Lewis and Steve Traynor have also contributed to this effort.

Karen Pelletier, Charlie Roots and other YGS staff continue to respond to increasing demands from educators and interest groups for information on the geology and non-renewable resources of the Yukon.

The types of outreach activities include:

Primary and secondary (* post-secondary)

- classroom visits*
- geology field trips*
- career fairs
- summer camps
- mining week activities

General public

- mining week displays and activities
- public talks
- public field trips

Adult activities

- training for teachers and interpretive staff
- group requests for speakers

In response to numerous requests for simplified geological information, particularly from travelers and educators, we have created various products of interest. These include new commodity and mineral potential brochures, upgrades to our websites, and a Yukon Geological Road Guide. The guide is expected to be available in spring 2008.

In 2007, Panya Lipovsky collaborated with **Dr. Kenji Yoshikawa** at the University of Alaska Fairbanks to establish a long-term permafrost health outreach program in the Yukon Territory. Boreholes were drilled at or near six schools (Beaver Creek, Whitehorse, Dawson, Faro, Ross River and Old Crow) to depths ranging between 3 and 15 m. Air and ground temperature data loggers were installed at each site and will be monitored annually by Grade 6 to 12 students who will post the results on a central website. The boreholes form part of a circumpolar network of permafrost monitoring stations that have been installed at schools throughout Alaska, Greenland, Russia, Mongolia and Scandinavia. In addition to actively involving school students, the program will contribute valuable data for scientific research.

PROGRAMS

YUKON MINING INCENTIVES PROGRAM

The Yukon Mining Incentives Program (YMIP) is administered by Steve Traynor. In 2007/08, funding totalling \$719 850 was offered to 45 of 56 applicants. Proposals approved for funding included 4 under the Grassroots – Prospecting module, 17 under the Focused Regional module and 24 under the Target Evaluation module.

Projects targeting gold accounted for 22 of the approved projects and included 14 hardrock targets and 8 placer targets. Copper was the targeted commodity for 11 other projects receiving approval for YMIP funding and another 7 of the approved exploration projects focused on zinc-lead. Of the remaining five proposals approved for funding, three targeted silver, one explored for molybdenum and another for uranium.

MINING AND PETROLEUM ENVIRONMENTAL RESEARCH GROUP

Mining and Petroleum Environmental Research Group (MPERG) is a cooperative working group made up of government agencies, environmental, mining and petroleum resource companies, Yukon First Nations and

non-government organizations (NGOs). It was established to promote research into environmental issues for mining and petroleum development in the Yukon. Participants bring together their resources and knowledge to work cooperatively on industry-related environmental issues and projects. MPERG creates a favourable environment to facilitate finding solutions before environmental problems arise. The Group is funded by YGS and chaired by Grant Abbott, with administrative support from Karen Pelletier.

Five studies were approved for funding for 2007/08:

- Yukon Government, Oil & Gas Management Branch: Stage 2 investigation of seismic lines and associated disturbances and the development of a recovery curve for modeling the cumulative footprint of oil and gas development in North Yukon;
- EDI Environmental Dynamics Inc.: Guidelines for Industrial Activity in Bear Country;
- EDI Environmental Dynamics Inc.: Guidelines for Flying in Caribou Country;
- EDI Environmental Dynamics Inc.: Natural Sources of Contaminants in the Yukon (with a focus on selenium and other organophilic elements);
- Amber Church, Simon Fraser University: Contemporary glacial influences on the hydrology and geomorphology of Wheaton River, Yukon.

INFORMATION MANAGEMENT AND DISTRIBUTION

With the increasing volume of information generated by YGS and others, and rapidly evolving digital technology, the Survey continues to put significant resources into making geological information more accessible. Our website and Map Gallery have both undergone substantial revisions that make them easier to use and provide greater online functionality to the MINFILE and publications databases. A large part of our effort has gone into developing and maintaining key databases and making all of our information internet-accessible. Ongoing activities include support for the H.S. Bostock Core Library and the Energy, Mines and Resources (EMR) library (Elijah Smith Building).

DATABASES

Yukon MINFILE is a database containing over 2600 records on Yukon's mineral occurrences. It is maintained by Robert Deklerk and Ken Galambos. The database is now fully searchable online. As a result, the most current CD-ROM release dates back to November 2005, and will likely be the last CD-ROM of the database we release. Online searching of the database allows the user to access the most complete and up-to-date data, as it links to a non-static dataset. This new direction has required conversion of the database from Access to Oracle and the standardization of data and data fields. Now that two geologists are devoted to MINFILE, plans are to progressively streamline and update the database over the next year.

The Yukon Placer Database, compiled by Bill LeBarge, was updated and a new version was released in May 2007, with detailed updated information from placer mining activity between 2003 and 2006. The database is in Microsoft Access 2000 format and is a comprehensive record of the geology and history of Yukon placer mining. The database contains descriptions of 457 streams and rivers, and 1443 associated placer occurrences of which 130 were updated for this version. It also includes location maps in Portable Document Format (PDF). We are currently working towards bringing this database online.

YGS, in partnership with GSC, is planning to update the Yukon Digital Geology compilation, which was last revised in 2003. The revised database will not only incorporate recent maps but will also conform to the North American Data Model. This standard, which is slowly being adopted by geological surveys across North America, allows users to generate a seamless map from more than one source (*i.e.*, two or more jurisdictions). The model will allow the selection of subsets of data to generate maps defined by lithology, age or map unit. It will also be possible to create generalized maps through a hierarchy of attributes (*i.e.*, Group vs. Formation or Paleozoic vs. Devonian). Jeff Bond and Panya Lipovsky began development of a Digital Surficial Geology Map of the Yukon in partnership with GSC and with SINED funding. The map database will have the same functionality as the bedrock database. Release is planned for early 2008.

The Yukon Regional Geochemical Database 2003, compiled by Danièle Héon, contains all of the available digital data for regional stream sediment surveys that have

been gathered in the Yukon under the Geological Survey of Canada's National Geochemical Reconnaissance Program. It can be viewed online through the Map Gallery and is available on CD-ROM in Microsoft Excel 2000 format and in ESRI ArcView Shapefile format.

The YukonAge Database, compiled by Katrin Breitsprecher and Jim Mortensen at the University of British Columbia with funding from YGS, was updated in 2004. It can be viewed on YGS Map Gallery in a version modified by Mike Villeneuve and Linda Richard of GSC. The database now contains 1556 age determinations derived from 1166 rock samples from the Yukon Territory. It is available in both Microsoft Access 2000 format and as a flat file in Microsoft Excel 2000 format so that the data may be viewed without Microsoft Access.

The Yukon Geoscience Publications Database is available online. It is current and contains more than 8000 references to papers on Yukon geology and mineral deposits, including YGS publications.

All open assessment reports (more than 5000) are now in PDF format and accessible over the internet through the EMR library website. In the Yukon, reports remain confidential for five years. In addition, we have acquired exploration records from the various companies that owned the Faro District. This acquisition includes both records of the Faro District as well as other projects. Most of the records are now available for viewing.

H. S. BOSTOCK CORE LIBRARY

Ken Galambos maintains 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.

EMR LIBRARY

The Yukon Energy, Mines and Resources Library is the Yukon's largest scientific library and an invaluable resource. It is located in Room 335 of the Elijah Smith Building and is open to the public. The Library provides access to Yukon Mining Assessment reports, maps (geology, topographic and aeromagnetic), and aerial photographs. It holds many geology journals and a good selection of materials on general geology, Yukon geology, and economic geology. The Library is also the access

point for Faro exploration records. In addition to geological information, the Library has books, reports and journals in other areas, such as oil and gas, forestry, agriculture, and energy, as well as a very comprehensive collection of Yukon publications.

INFORMATION DISTRIBUTION

YGS distributes information in three formats: 1) paper maps and reports are sold and distributed through our Geoscience Information and Sales office; 2) many recent publications and databases are available in digital format at much lower prices than for paper copies; and, 3) most of our publications are available as PDF files on our website (www.geology.gov.yk.ca) free of charge. A catalogue of assessment reports is also available online (www.emr.gov.yk.ca/library).

We are pleased to make spatial data available through our interactive map server; the MapMaker Online (formerly the Map Gallery) can be accessed through the YGS website. We are continuing to improve MapMaker. Users are encouraged to provide feedback and suggest improvements.

Hard copies of YGS publications are available at the following address:

Geoscience Information and Sales
c/o Whitehorse Mining Recorder
102-300 Main Street (Elijah Smith Building)
P.O. Box 2703 (K102)
Whitehorse, Yukon Y1A 2C6

Ph. (867) 667-5200
Fax (867) 667-5150
E-mail: geosales@gov.yk.ca

To access publications and to learn more about the Yukon Geological Survey, visit our website at www.geology.gov.yk.ca, or contact us directly:

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To access the EMR Library:
 Website: www.emr.gov.yk.ca/library
 Ph. (867) 667-3111
 E-mail: emrlibrary@gov.yk.ca

2007 PUBLICATIONS AND MAPS

YGS ANNUAL REPORTS

Emond, D.S., Lewis, L.L. and Weston, L.H. (eds.), 2007. Yukon Exploration and Geology 2006. 268 p.

Burke, M., Traynor, S., Lewis, L., LeBarge, W., Abbott, G., Colpron, M. and St. Amand, J., 2007. Yukon Mining, Development and Exploration Overview 2006. 79 p.

Galambos, K., Lewis, L.L. and Traynor, S. (compilers), 2007. Yukon Mineral Property Update 2007, 93 p.

LeBarge, W.P. and Welsh, C.S. (compilers), 2007. Yukon Placer Mining Industry 2003-2006, 235 p.

Traynor, S. (compiler), 2007. Yukon Mineral Deposits 2007, 14 p.

YGS DATABASES

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La Commission géologique du Yukon

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SOMMAIRE D'ACTIVITÉS

La Commision géologique du Yukon (CGY ; figure 1) a rebondie d'une période difficile en 2006 et a vu un nombre d'ajustements au personnel en 2007 (figure 2). C'est avec plaisir que l'on accueil le retour de Robert Deklerk aux Services minéraux après avoir vaincu un cancer. Ken Galambos est aussi de retour après quelques années avec le département du développement économique. Il travaille maintenant sur le MINFILE avec Rob. Steve Traynor remplace Ken au Programme d'encouragement des activités minières du Yukon (PEAMY). Les Services minéraux ont aussi grandement bénéficier de l'aide temporaire de Lauren Blackburn et Catherine Welsh. Notre bureau de vente des cartes est aussi en transition après la retraite d'Ali Wagner au printemps dernier ; elle est remplacée à titre temporaire par Kim Murray. Notre capacité en terme de l'Information géospatiale a aussi augmentée avec l'arrivé d'Aubrey Sicotte à titre permanent et de Bailey Staffen pour un an. Il ne fut pas possible de combler les postes vacants de géologues de projet et d'évaluation minérale en 2007, mais on demeure optimiste pour l'an 2008. Finalement, c'est avec plaisir que l'on accueil en 2008 la Docteure Carolyn Relf comme nouvelle directrice, remplaçant Grant Abbott qui prendra sa retraite au printemps. Carolyn amène avec elle une expérience scientifique et administrative exceptionnelle, et c'est avec anticipation qu'on attend sa direction.

Un comité de liaison technique à la CGY examine nos programmes deux fois par année. Nous remercions le président, Gerry Carlson, et les membres du comité pour leur précieux appui et les conseils constructifs qu'ils nous fournissent.

CARTOGRAPHIE DU SUBSTRATUM ROCHEUX

1. **Don Murphy** est en charge d'une étude multidisciplinaires du terrane de Windy-McKinley dans la région de Stevenson Ridge : une région avec peu d'affleurements, donc peu connue. Ce projet est en collaboration avec la Commision géologique du Canada (CGC) et plus particulièrement Cees van Staal. Le projet inclut aussi une étude des dépôts meubles sous la direction de Jeff Bond. Les résultats préliminaires révèlent un potentiel minéral qui était jusqu'à maintenant inconnu. Un relevé géophysique aéroporté est prévu pour l'année à venir.
2. **Steve Israel** a complété la cartographie de la partie occidentale des monts Kluane, où des indices de minéralisation de nickel-cuivre et éléments du groupe du platine tel que Canalask sont présentement examinés par l'industrie. Les travaux de Steve ont permis d'éclaircir l'histoire tectonique complexe de Wrangellia. Il est aussi impliqué dans une étude de la déformation récente associée à la faille de Denali en collaboration avec Don Murphy de la CGY et des chercheurs de la Commision géologique des États-Unis (USGS).

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- 3. Lee Pigage** a complété la cartographie de la région d'Otter Creek dans le sud-est du Yukon. Ce projet a pour bût d'améliorer nos connaissances de la stratigraphie, la structure, et le potentiel minéral à la limite sud-est du bassin de Selwyn. La région entoure le gisement de barityne-plomb-zinc épigénétique de Mel. Le bassin de Selwyn est bien connu pour ses gisements géants de plomb-zinc tel que Howards Pass et Faro, mais sa partie sud-est demeure peu explorée largement à cause de sa faible densité d'affleurements. Lee propose une nouvelle interprétation stratigraphique et structurale qui devrait être utile à la définition de nouvelles cibles d'exploration.
- 4. Maurice Colpron** a collaboré avec **Grant Lowey, Don White et Steve Gordey** de la CGC, et **Steve Piercy** de l'université Laurentienne, pour complété une nouvelle compilation géologique de la partie nord de la fausse de Whitehorse. Cette compilation intègre la géologie de surface avec le relevé sismique acquis en 2004 et révèle un style de déformation de plis et chevauchements à transport vers le sud-ouest. Cette nouvelle interprétation sera importante lors de la réévaluation du potentiel pétrolier de la fausse de Whitehorse prévue pour 2008.
- 5. Elizabeth Westberg** a entamé une cartographie détaillée à la bordure des régions de Laberge et de Quiet Lake dans le cadre de sa maîtrise à l'université Simon Fraser, sous la direction de **M. Colpron** et du Docteur **H.D. Gibson**. Cette étude tentera de préciser la nature du contact entre les terranes de Yukon-Tanana et de Cassiar, et déterminera l'âge et les conditions de déformation et du métamorphisme dans cette région.
- ÉTUDES DE GÎTES MINÉRAUX**
- 1. Lara Lewis** a continué à recueillir des données sur les indices d'uranium associés aux brèches de Werneck et reliés aux intrusions, dans le cadre d'une compilation portant sur l'exploration pour l'uranium au Yukon. De nouvelles datations de la minéralisation en uranium devraient établir la chronologie des événements minéralisateurs.
- 2. Jake Hanley et Ed Spooner** (université de Toronto) ont complété une étude post-doctorale portant sur l'origine et l'évolution des fluides magmatiques, et leurs relations à la minéralisation aurifère dans les granites du Crétacé moyen au Yukon.
- 3. Kirsten Rasmussen** a entamé une thèse de doctorat avec le Docteur **Jim Mortensen** (université de la Colombie-britannique [UBC]) portant sur le magmatisme d'âge Crétacé au Yukon et dans les parties adjacentes des Territoires du Nord-Ouest et de l'Alaska. Cette étude est la culmination de plus de 15 ans de recherches par la CGY et les chercheurs de l'unité de recherche en gîtes minéraux de UBC (MDRU). Cette étude contribuera entre autre à la nouvelle base de données sur les roches ignées de la CGY.
- 4. Thierry Betsi** a débuté une étude doctorale des indices aurifères de la partie sud du Dawson Range, sous la supervision du Docteur **David Lentz** de l'université du Nouveau-Brunswick (UNB). La minéralisation en métaux de base et précieux semble être associée aux intrusifs d'âge Crétacé dans la région, mais les facteurs contrôlant sa mise en place ne sont pas bien compris.
- 5. William LeBarge** a poursuivi sa collaboration avec le Professeur **Valdimir Naumov** et ses étudiants gradués de l'université de Perm en Russie portant sur l'étude des placers récents et anciens de la région de la rivière Indian au sud de Dawson. Le bût de cette étude est de développer une nouvelle interprétation de la géologie dans l'espoir d'identifier de nouvelles sources d'or filonien, de même que de nouvelles ressources placériennes dans les ruisseaux avoisinants. De plus, le Docteur **Jim Mortensen** (UBC) utilise la composition géochimique de l'or afin d'établir la relation entre les dépôts filonien et placérien, incluant la probabilité de paléoplacers dans le conglomérat de McKinnon Creek.
- 6. William LeBarge** et la Docteure **Yana Fedortchouk** ont conduit une étude portant sur l'évaluation du potentiel pour les diamants alluviaux au Yukon. Ils ont échantilloné plusieurs des localités où l'on a rapporté des rumeurs de diamants. Ces échantillons sont présentement analysés pour la présence de minéraux indicateurs à l'université Dalhousie. Le Docteur **Valentin Afanasiev** de l'académie des sciences russe de Novosibirsk en Russie agit comme consultant sur ce projet.

ÉTUDES PORTANT SUR LES HYDROCARBURES

1. **Tammy Allen** et **Tiffani Fraser** sont dans leurs deuxième année d'une étude de quatre ans portant sur l'évaluation du potentiel en hydrocarbures de la région de Peel, dans le nord-est yukonnais. Ce projet est une collaboration de la CGY avec la CGC, le centre géoscientifique des Territoires du Nord-Ouest, et des partenaires industriels et universitaires. Leurs études sont centrées sur les unités du Paléozoïque supérieur, notamment les formations de Canol, Imperial et Tuttle, dans le bût de déterminer leurs potentiels en termes de roches sources et de réservoir.
- 2, 3. **Grant Lowey** a complété ses travaux de terrains dans le cadre de son étude de trois ans de la sédimentologie, stratigraphie, et le potentiel en hydrocarbures du Groupe de Laberge dans la fausse de Whitehorse. Ce projet se conclura en 2008 avec une réévaluation du potentiel pétrolier de la fausse de Whitehorse. Grant a aussi entamé une reconnaissance du bassin de Bonnet Plume dans le nord du Yukon dans le bût d'y poursuivre un projet à long terme. Ce bassin renferme plusieurs gisements de charbon et cette étude résultera en une meilleure évaluation de son potentiel en charbon et en gaz.
3. Un grand nombre de données sur le pergélisol et les dépôts meubles sont contenues dans les forages géotechniques qui ont été fait le long de la route de l'Alaska au cours des 30 dernières années. **Panya Lipovsky** a compilée cette information dans une base de données qui contient maintenant plus de 5000 forages entre Beaver Creek et Haines Junction. **Megan James** continuera cette compilation au cours de l'année à venir dans le cadre de sa maîtrise avec le Docteur **Antoni Lewkowicz** de l'université d'Ottawa.
4. Une avalanche de roches et de glace majeure s'est produite le 24 juillet 2004 sur le côté nord du mont Steele dans le sud-ouest du Yukon. Des débris on voyagés sur plus de 6 kilomètres, avec une chute verticale de plus de 2150 mètres, et déposant près de 3,66 kilomètres carrés des roches et de glace sur le glacier Steele. Ce fût le glissement de terrains le plus important dans la cordillère canadienne depuis 1899. **Panya Lipovsky** étudie ce glissement de terrain avec plusieurs chercheurs canadiens et américains.
5. **Amber Church** a débutée une étude de l'histoire glaciaire de l'Holocène tardif dans la vallée de Wheaton au sud de Whitehorse. Cette étude formera la base de sa thèse de maîtrise sous la direction du Docteur **John Clague** à l'université Simon Fraser.

ÉTUDES DES DÉPÔTS MEUBLES

1. **Jeff Bond** et **Panya Lipovsky** ont entamé la cartographie des dépôts meubles dans les régions de Stevenson Ridge et de Kluane Lake ; région qui enjambre la limite Pléistocène des glaciers émanants des monts Saint Elias. La région renferme plusieurs limites glaciaires et semble préserver une stratigraphie du Quaternaire complexe. Cette étude amènera vraisemblablement une meilleure compréhension des glaciations récentes au Yukon. Un socle rocheux favorable et de grandes étendues de terrains non-glaciaires sont propices à la découverte de nouveaux placers dans la région.
2. **Panya Lipovsky** utilise une vaste gamme de techniques afin de déterminer la distribution, géomorphologie et les impacts de divers accidents de terrains dans le sud et le centre du Yukon. Elle continue la surveillance des glissements de terrain reliés à la fonte du pergélisol et aide le département des parcs du Yukon dans l'établissement d'un système de surveillance en amont du terrain de camping du lac Kusawa.
6. **Kristen Kennedy** étudie les dépôts meubles dans la région d'Eagle Plain dans le cadre de sa maîtrise sous la direction du Docteur **Duane Froese** à l'université d'Alberta. Cette région renferme une des rares ressources en graviers du nord du Yukon ; ressource qui sera nécessaire pour la construction de routes pour le développement éventuel des ressources en hydrocarbures de la région.

ÉTUDES DÉTAILLÉES

1. **Francesca Furlanetto** a commencé une étude doctorale des minéraux détritiques dans les roches sédimentaires du Supergroupe de Wernecke sous la direction du Docteur **Derek Thorkelson** de l'université Simon Fraser. Ces données permettront de préciser les corrélations entre le Supergroupe de Wernecke et d'autre séquences sédimentaires au Canada et ailleurs, ainsi que l'environnement géologique de plusieurs indices minéraux du nord du Yukon.

2. **Luke Beranek** continue d'augmenter le nombre d'analyses des zircons détritiques dans les roches Paléozoïques tardives et du Trias de part et d'autre de la limite entre la marge continentale nord-américaine et les terranes de Slide Mountain et Yukon-Tanana. Cette étude forme la base de sa thèse de doctorat à l'université de Colombie-Britannique sous la tutelle du Docteur **Jim Mortensen**. Luke a démontré que des débris provenant des terranes s'accumulaient sur la marge nord-américaine dès le Trias précoce, beaucoup plus tôt que l'on le croyait auparavant.

RELEVÉS AÉROMAGNÉTIQUES

1. La CGC, en collaboration avec la CGY, a complété un programme majeur de relevés aéromagnétiques des monts Werneck et Mackenzie qui fût commencé en 2006. Les résultats seront disponibles en début 2008.

GÉOCHIMIE

1. La géochimie des ruisseaux est pratiquement complétée au Yukon. On entame maintenant la modernisation des analyses dans le but de standardiser ces données à l'échelle régionale. Les résultats de réanalyse des feuillets cartographiques 105G et 105J seront publiés en début 2008, alors que ceux des feuillets 105H et 105I paraîtront plus tard dans l'année.

DIFFUSION DE L'INFORMATION

La Commission géologique du Yukon diffuse de l'information en trois formats : 1) les cartes et rapports sur papier sont vendus par le Bureau d'information et des ventes en géoscience ; 2) la plupart de nos publications et bases de données récentes sont disponibles en format numérique à prix réduit ; et 3) plusieurs de nos publications sont disponibles sans frais sous format PDF sur notre site internet (www.geology.gov.yk.ca). La liste des rapports d'évaluation de propriétés minières disponibles en format numérique est maintenant aussi offerte par internet (www.emr.gov.yk.ca/library).

Nous sommes fier de diffuser de l'information géospatiale par l'entremise de notre service de carte interactive 'MapMaker' (l'ancien Map Gallery), que l'on accède par le site internet de la CGY. Ce site de carte interactive est continuellement le sujet d'améliorations ; nous apprécions les commentaires des usagers.

Les publications de la Commission géologique du Yukon sont diffusées par le Bureau d'information et des ventes en géoscience. Elles sont disponible à l'adresse suivante :

Bureau d'information et des ventes en géosciences
a/s Conservateur des registres miniers
le ministère de l'Énergie, des Mines et des Ressources
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