REPORT OF A WORKSHOP ON

MINERAL INVENTORY DATA FILES

Toronto, March 14, 1985

Geological Survey of Canada
Open File 1173

PART I Proceedings of the Workshop

Compiled by

A. Sutherland Brown
Geological Engineer, Victoria, British Columbia

and

L.M. Cumming
Economic Geology and Mineralogy Division, Ottawa

1. PREFACE

This report presents the Proceedings of a Workshop on "Mineral Inventory Data Files" convened in Toronto March 14, 1985 in conjuction with the Annual Convention of the Prospecters and Developers Association (March 11-13). The Workshop was sponsored by the Geological Survey of Canada and the Mineral Policy Sector, Department of Energy, Mines and Resources. It was organized in response to suggestions from the mineral industry (expressed through the Independent Industrial Advisory Commitee to the Assistant Deputy Minister, Earth Sciences Sector, EMR) that there was a need for a public forum to discuss technical and policy aspects of modern computerized mineral data file systems in Canada, particularly with a view to looking at the role that various users and generators of mineral information (industry, provincial and territorial governments, federal government) could play.

The Workshop drew participants from across Canada, with most provinces, two federal departments (EMR and Department of Indian and Northern Affairs) one territory (NWT) and many mining and exploration companies being represented. As evidenced by numerous enquiries received after the Workshop (some from overseas) for copies of Proceedings, there appears to be a considerable interest in the subject within the exploration and geoscience community. The present report was prepared for early release of information; it contains the records of presentations made at the Workshop as well as relevant contributions received by the organizers immediately following the Toronto meeting.

The organizers wish to thank the participants and attendees at the Workshop for their various useful contributions. In particular we are indebted to Dr. Atholl Sutherland Brown who acted as Chairman of the Discussion Panel and who prepared part of the Workshop Report that follows, and to Dr. George Miller who acted as General Chairman and who provided a Summary, also to be found in this report.

D.C. Findlay, Geological Survey of Canada, Ottawa
R.J. Shank, Mineral Policy Sector, EMR, Ottawa
R.J. Cathro, Archer, Cathro & Associates, Vancouver

CONTENTS

CONTENTS

APPENDIX

PART II Texts of presentations at the 1985 Workshop on "MINERAL INVENTORY DATA FILES" plus background literature.

2. INTRODUCTION AND PROGRAM

A Workshop was held at the Royal York Hotel, Toronto. Attendance was open and some 150 persons were present.

This report summarizes the papers, the panel statements and the discussion and has an Appendix that includes the papers, or speakers notes, plus background information and literature handed out at the Workshop. One paper (item 6.9 in Appendix) was prepared after the Workshop and is included because of its general interest.

The program for the Workshop is outlined on the following page. This program was circulated in the advance publicity (see item 6.11 in Appendix).

PROGRAM

General Chairman's opening remarks	C.G. Miller
Background to the Workshop	P. Kavanagh
<u>Federal Government Mineral Data Files</u>	
National Mineral Inventory & MINSYS	R.J. Shank
CANMINDEX	D.F. Garson, R.M. Laramée
<u>Provincial Government Mineral Data Files</u>	
MINFILE: British Columbia Computerized Mineral Inventory System	A.F. Wilcox
Mineral Inventory Data Bases in the N.S. Department of Mines	N.A. Lyttle
The Newfoundland Mineral Occurrence System	C.F. O'Driscoll
<u>Corporate Mineral Data Files</u>	
Northern Cordillera Mineral Inventory	R.J. Cathro
Cominco's Experience in Preparing Mineral Data Files	M. Tilkov
<u>Panel and General Discussion</u>	
Introduction	D.C. Findlay
Panel Discussion	A. Sutherland Brown (Chairman) J.A. Coope J. Garnett R.A. Price W.H. Sellmer
General Discussion	various participants
Summary Statements	C.G. Miller and A. Sutherland Brown

General Chairman's opening remarks C.G. Miller, Managing Director of the Mining Association of Canada

Dr. Miller opened the Workshop with a short statement of the importance and scope of the subject and the information that the workshop organizers were looking for tangible output from these discussions. He noted that Mineral Inventory Data Files are extremely useful sources of information which involve exploration data that might otherwise become lost. In addition, Dr. Miller emphasized that, collectively, a great deal of effort was being put into the development and maintenance of these files across Canada. However, he pointed out that perhaps the best ways and means to maximize the use of these files has not yet been found. This workshop should aid in the process.

Background to the Workshop P. Kavanagh, Vice President Rio Algom and Chairman of the Independent Industrial Advisory Committee

The Independent Industrial Advisory Committee on Earth Sciences was formed by Dr. W.W. Hutchison to report to the Department of Energy, Mines and Resources. The Committee regarded the EMR Mineral Inventory files as a valuable part of a national geoscience data base.

This possibility of some federal files being discontinued prompted the committee, during a 1984 meeting, to recommend this Workshop be held, so as to focus on more efficient ways for Mineral Inventory Data Files to serve industry, the public and government. A steering committee was struck so that the proposed Workshop would review the current situation with invited papers, followed by panel and general discussions. The steering committee consisted of R.J. Shank, R.J. Cathro, and D.C. Findlay.

3. SUMMARY OF PAPERS

Federal Government Mineral Data Files

National Mineral Inventory & MINSYS

R.J. Shank, Director General of Resource Strategy

and Information Branch, Mineral Policy Sector, EMR

The National Mineral Inventory (NMI) is a file of 8½" x 10½" cards totalling about 19000 in number. Its origins date to before 1900. NMI is intended to record all occurrences of national significance. The cards have short location and description, production and reserve fields and an extensive history record. The cards are accessed through MINSYS which is a computer index. They are available to the public at 25¢ per card and sales have climbed from about 10,000 cards in 80/81 to about 20,000 in 84/85. The inventory is the basis of strategic information to government and the volume "Canadian Mineral Deposits not being Mined". This volume is updated and published every three years and currently the 1983 edition has 308 pages.

Maintenance of the file is done by seven geologists and one clerk with an operating budget of $18,000 per year and $10,000 per year for computer costs. Inventory staff have good relations with the provinces and exchange information with all except Alberta, Prince Edward Island and the territories, none of which have mineral inventories.

Background notes for R.J. Shank's talk (6 pages) and a recently published brochure "The National Mineral Inventory" are contained in the Appendix.

CANMINDEX

D.F. Garson and R.M. Laramée, Geological Survey of Canada

CANMINDEX is an internal data base for the Economic Geology Subdivision, GSC. It is a shallow computer processable file which draws data from existing mineral inventory files (federal, provincial and industry) and from source literature in support of research projects. Compilation was initiated on a commodity basis and has subsets of data for Pb and S-isotopes, copper, lead, molybdenum, production and reserves, bibliography, age of deposits – all linked by a central index. CANMINDEX is not publicly accessible except when released in the form of standard GSC publications; for example, the appendix (pages 17-62) of GSC Paper 81-12 "Copper Deposits and Occurrences in Yukon Territory" by Carrière, Sinclair and Kirkham (1981) or GSC Open File 716 "Non-Hydrocarbon Mineral Resource Potential of parts of Northern Canada". CANMINDEX is widely used in the Economic Geology Subdivision as a research tool.

The text for D. Garson's and R. Laramée's talk (7 pages) is in the Appendix (item 6.2). In response to questions, the following questions were posed to Shank, Garson and Laramée by various members of the audience.

Q. How can an exploration geologist get initial data without going to Ottawa?

A. You can write or phone and ask "what do you have" in a certain NTS map block. There are microfiche listings for some files. MINSYS tapes can be purchased for $62.50. Searches, by area or commodity, can be requested by mail or by phone or at the Ontario Geological Survey. NMI cards are available at 25¢ each.

Q. We have 150 visitors per month at our Kirkland Lake office; can they phone into your data base?

A. No, CANMINDEX is an internal system; you would be better advised to phone NMI at (613) 995-9466. Telex: 153317, keeping in mind that their computer index is not yet complete.

Q. What percentage of data in CANMINDEX comes from provincial sources of information?

A. About half the data sources used are from provincial files.

Q. How often are NMI cards updated?

A. Not on a regular basis; but updates are noted on the cards and on the computer index.

Q. How is CANMINDEX available to the public?

A. Chiefly through publications.

Q. What is the Pearson file?

A. A specialized subfile of CANMINDEX dealing with copper occurrences in an area north of Lake Huron. It was constructed by a Ph.D. student (Pearson) at Queen's University and by J.J. Carrière at the GSC (see Appendix p. 119).

Q. What is the duplication of NMI and CANMINDEX?

A. There is not much duplication because the two files are so different.

Q. Is CANMINDEX available on tape?

A. Only those parts are available on tape which have been used in support of GSC projects from which a GSC report or open file document has been issued - for example GSC Paper 81-12 "Copper Deposits and Occurrences in Yukon Territory "(See Appendix p. 114) or GSC Open File 716 "Non-hydrocarbon Mineral Resource Potential of parts of northern Canada" (See Appendix p. 115).

Q. What is GEOSCAN?

A. This is a national bibliographic index of geoscience data for which nine provinces plus other organizations are contributors.

Comment:

It seems difficult for an individual or company to get magnetic tapes from various computer files, because of incompatible systems.

Reply:

It is agreed that this is a problem, but the solution to the problem is in knowing the computer systems.

Comment:

It seems clear that CANMINDEX is an internal file (or data base) for GSC research projects and the two files to be considered for public access are GEOSCAN and NMI-MINSYS.

Reply:

That is exactly correct.

Comment:

Bibliographic references in GEOSCAN are difficult for the user to assess, because their types of data may not be indicated by the title.

Reply:

We at the GSC are aware of this problem and we do provide a brief description, or indication, of what kind of information is found in a reference, e.g. geochemistry, mineralogical or quantitative (tonnage) data.

Provincial Government Mineral Data Files

MINFILE: British Columbia's Computerized Mineral Inventory System

Allan F. Wilcox, Mineral Inventory Geologist, British Columbia Ministry of Energy, Mines and Petroleum Resources

The British Columbia inventory system has had a long history and it started in 1967 as a manual file in which, for example, the detailed geology used 15 different parameters. After considerable redesign of the system and inception of a computerized MINDEP file at University of British Columbia in 1973 there was a transfer of data to the Ministry in 1976 and subsequent transfer to Honeywell main frame and back to IBM. The system now lists 8,800 mineral occurrences, and 50-100 are added per year.

A variety of plans were discussed including downloading to a VAX and to other microcomputers; testing of various management systems; integration with Assessment Report Files; upgrading geology and work history fields and having project and district geologists responsible for updating and input.

Redesign is to be completed in 1986, and the whole file enhancement to be completed in 1989. The computer file is now available on tape, printout format and soon will be available on fiche. Present data fields include deposit identification and location, commodities, geology, production and reserves. While it is a very actively used file it has some severe faults, partly the result of its history of multiple conversion and minimal manpower application. Other failings are related to the batch processing management system (hence allowing limited search capability) and to the accuracy of input in certain years.

In 1981 the Honeywell to IBM transfer caused problems, so that it cost $3,300 just to make a backup copy of a tape. It was found the status of a deposit might not be accurate, and UTM vs Long. and Lat. conversions have not yet been resolved.

There is a 5-year plan to provide a better data file. The MINIFILE will be redesigned so that:-

1. Deposit types will be repeatable.
2. The host-rock section will provide space for age of mineralization.
3. There will be a direct link to other data bases.

A delegate from the floor requested some sort of coding for references in order to lead quickly to the important ones. Another delegate questioned the level of cooperation the project and district geologists would be able to give to inputting of new data.

The text of the talk (7 pages) is in the Appendix and it contains hardware specifications. Software is still being evaluated.

Nova Scotia Department of Mines and Energy Mineral Inventory Data Bases

N.A. Lyttle, Supervisor, Mineral Inventory and Library, Nova Scotia Department of Mines and Energy

The Nova Scotia Department of Mines and Energy has developed the following files:-

1. Mineral Occurrence Data Cards
2. Mineral Occurrence Data Base
3. Drill Hole Data Base (on land only)
4. Bibliography Data Base

A manual card file system was developed by Diane Gregory et al during 1975-79 and computerized during 1980-84. These were cooperative Federal-Provincial projects as part of The Mineral Development Agreements under DREE. There is one set of files for industrial (non-metallic) minerals and another for metallic mineral occurrences. A "Mineral Occurrences Edition" of the geological map of Nova Scotia was published in 1979.

The metallic file has 894 occurrences, the non-metallic 1052 occurrences. Data include name, location, minerals, and geological characterization. The metallic inventory is available in hard copy in three publications. Open file reports which list metallic mineral occurrences and include a map can be purchased for $3.00; these reports are:-

OF 599 – covers 11D, 11E - Central Nova Scotia

OF 600 – covers 11F, G, J, K, N - Eastern Nova Scotia

OF 601 – covers 20 O, P, 21A, B, H, - Western Nova Scotia

(see Nova Scotia map in Appendix, page 27, for National Topographic System grid).

An "Industrial Mineral Occurrence" list will be published soon. The inventory management and output is handled by MRMS (Maritime Resource Management Service) in Amherst, N.S. which is a private service company. They will search information on request and produce hard copy output.

The drill hole data base includes only holes on-shore. At present 5500 drill holes are reported and some 2800 more await data entry from 1,500 assessment reports.

The bibliographic data base is integrated with GEOSCAN, and 7,140 records from Nova Scotia are now on-line. Thus, there is excellent control of Nova Scotia geoscience information and a variety of indexes and keyword indexes are available. Indexes are available in hard copy or fiche e.g. "Index to Publications and Open File Reports 1981, 1982 and 1983 (with keyword index)"; Nova Scotia Department of Mines and Energy Report 84-3 (1984) by Norman A. Lyttle and Janet Gillespie-Wood, 152 pages plus 9 fiche cards.

P. Kavanagh asked why such subjective phrases as "poor mine" or "good occurrence" were to be found on a few of the mineral occurrence cards. N. Lyttle answered that this was carry-over from old notations and old information, which was thought to be still useful.

Slide captions and notes (12 pages) for this talk are in the Appendix. These provide additional information on Nova Scotia publications and keyword indexes.

Newfoundland Mineral Occurrence System

C.F. O'Driscoll, Mineral Deposits Section, Department of Mines and Energy Government of Newfoundland and Labrador

The Newfoundland-Labrador mineral inventory was initiated in 1971, based on NMI but then abandoned until 1978 when it was reinstituted and computerized. The highly text-oriented card system is available as photocopy. It will also eventually be available in microfiche. Coverage is good in Newfoundland but less so in Labrador except in the Central Mineral Belt.

Mineral occurrence descriptions, ranging from producing mines to indications are filed by the NTS system. There are 3,000 occurrences from Newfoundland and Labrador. The locations of these are plotted on 1:50,000 map sheets and there are 15,000 pages of supporting descriptive data.

Mineral occurrence maps are published at a scale of 1:250,000 which list the NMI code, the deposit name, minerals present and status of the deposit (graded 1 to 7 – with 1 being a producer, 3 a past producer, 6 a showing and 7 an indication). Eventually some partial information from each mineral occurrence card will be computerized using the "GRASP" program of the USGS which is highly interactive.

The overall inventory project is proceeding as planned and about three quarters of the known occurrences are now available. It is not possible to purchase computer tapes yet, but this is planned when the inventory is completed.

The text of "Newfoundland Mineral Occurrence Data System" (13 pages) is in the Appendix plus two one page Summaries from Newfondland Department of Mines and Energy Current Activities Report 85-1.

Corporate Mineral Data Files

Industry files of two types were described; custom files for commercial sale and company files for inhouse use. One example of each is given.

The Northern Cordillera Mineral Inventory

R.J. Cathro, Archer, Cathro & Associates (1981) Limited

The firm, Archer, Cathro and Associates produces two commercial data files which grew out of private files:-

1. Northern Cordillera Mineral Inventory, with 2,530 occurrences in Yukon and Northwest Territories.
2. Northern British Columbia Inventory, with 1,925 occurrences.

These two files are now disseminated in offices of 75 clients.

The first file (NCMI) was started in 1966 for inhouse use but was expanded in 1971 and prepared for sale through the efforts of knowledgeable explorationists working in the off season. No broad, substantial government inventory exists for Yukon. The file contains 2530 occurrences of which about 12% are in Northwest Territories. Growth per year is 40 to 200 occurrences. The file emphasizes early exploration information, which is commonly lost if early contact is not made with exploration companies. Most of the data have been verified in the field or by personal contacts. The file is currently being computerized and search capability exists by indices of company names, metals and deposit types.

The second file (NBCI) was started in 1983 and contains about 1925 occurrences in 41, 1:250,000 map sheets covering about 40% of Northern British Columbia. Plans call for growth to cover the entire area of the province north of 51°N, which contains about 50% of known deposits in British Columbia. The present

file is on a word processor with search capability. The file is based principally on occurrences which have assessment reports filed, in contrast to NCMI which covers all staked properties. The NBCI is restricted to metallic occurrences.

R. Cathro emphasized the Archer, Cathro files were more complete, accurate, and were much more inclusive of early exploration data than government files. His views were partially summarized in his Figure 5 (see page 67 in Appendix). He emphasized they expended no public money but did not state what the files cost. However, he believed that there are appropriate roles for provincial and federal files and this is indicated in his Figure 6 (see page 68 in Appendix). The full text of the talk (21 pages) is in the Appendix.

Cominco's Experience in Preparing Mineral Data Files

M. Tilkov, Cominco Ltd., Vancouver

Cominco has had a long history of manual files and has extensive data. They had one computerized system in the late 60's now abandoned. In 1981 they started the present program to build a maintainable, computerized file with good updating characteristics, minimal manpower requirements, and powerful search and reporting capability. The Cominco file was designed to catalogue their own files and to extend them by incorporating some "outside" files for on-line storage and reporting. Data fields include a unique Cominco number, province, entry and revision date, space for 8 elements or commodities, property name(s), two cross references; location, status, deposit type, rock types, exploration methods and geological comments. Entry is encouraged by all company geologists by form or on-line. All information can normally be entered in one data screen.

Manpower includes a data base manager and 1 to 4 summer students. The program has been running for 3½ years and has been revised twice. It has powerful search, plotting capability and integration of data such as contoured geochemical data occurrences. Cominco's data entry form has 10 spaces for alternate names of deposits; geological comments average only 4 lines and only two properties required listing of more than 8 chemical elements. The Cominco inventory was compared with MINFILE, MINSYS tapes and Archer Cathro (NCMI), all of which Cominco used to design their data fields.

Some problems encountered included incorrect data, incomplete data and unexpected errors. Cominco made allowance for 200 duplicate names; "How many Silver King Mines can you have?". Also 325 properties were misidentified

as "occurrences". There are 3,300 gold properties. Errors can now be fixed as soon as spotted. Cominco attemps to update its data and to provide an index with a brief summary of data.

The data itself is the most important factor and attempts are made to make it as reliable as possible. Data input needs to be standardized to a greater degree, so that it can be exchanged readily. Standardized codes, numbering systems and input forms are needed.

The full text of this talk (24 pages) is in the Appendix.

4. Panel and General Discussion

A. Sutherland Brown took the Chair and introduced the panel consisting of senior managers of two exploration companies, the federal and a provincial government.

Introduction — D.C. Findlay, Director of Economic Geology and Mineralogy Division, Geological Survey of Canada

The audience was reminded that it was nearly 10 years since the subject of mineral inventory data files had been broadly discussed in Canada and that much had happened in that decade in regard to growth, development and divergence of files and also remarkable changes in technology. Five important issues were outlined:

1. Problems of Integration and Access to Federal files.
2. Concepts of "National" files with two proposed models.
3. Role of Industry as generator and user of files.
4. Public Accessibility of Government files.
5. Impact of Changing Technology.

(1) Concepts for national files were: -

a. a "central core" system, with access links to and from surrounding satellite sources.

b. a "node" system of lateral linkages (see slide 3, p. 104 in Appendix).

Both technological evolution and feedback from industry improve the systems or may indicate design modifications.

Notes for this talk (9 pages, including 4 slide figures) are given in the Appendix.

Panel Member Statements

The panel then gave short statements in the order listed in the program, followed by discussion among themselves and with the audience.

A. Coope: (Vice-President Exploration, Newmont Exploration of Canada Ltd.) emphasized that research geologists and explorations geologist needs are different and by inference the former's needs are not completely compatible with current computer file formats. He also emphasized that the cost of government files should be kept under control, that accuracy and standardization were paramount and that we did not need a giant inclusive national file.

J. Garnett: (ADM, Nova Scotia Dept. of Mines & Energy) stated that over the last decade, there had been major progress in the development of provincial, federal and industry files. There had been, also, an element of deja vu relative to the problems of format, standardization, overlap and integration. The role of Federal/Provincial funding in building provincial files of the "have not" provinces, had been vital, as had been the commitment and dedication of the file builders. Industry relies on provincial files as a starting point for their own files.

The provinces need quick and reliable information on mineral areas at a reasonable price. There is also a desirability of a "national file" to be built by assembly of provincial files.

R. Price: (Director General of the Geological Survey of Canada) stated that there are overlapping needs in regard to mineral data files. The needs of the private sector are not the same as the provinces, territories, federal government or academia. Each has a separate need and each is going its own way. There is a requirement to eliminate duplication and to implement systems to share resources. Areas of common interest among disparate groups should be sought.

For efficiency and minimum cost, there is a need to share the significant common elements. The generation of data is principally an industrial activity. The provinces have primary responsibility for the mineral resources and the federal needs are of national scope. The research scientists concerns are in regard to innovation and discovery.

The problem of data assembly is often a generic one. In the field of petroleum geology, a GSC scientist cannot hope to handle all the drill hole information. In the petroleum industry there are industrial specialists who log core and make this information available.

There is also a need for a central index data file from which one could track down the required data from the agency that holds the detailed information.

An agency like the GSC has a research function and there are two fundamental constraints concerning its data management:-

(1) Confidentiality of certain data.

(2) The bottom line of costs. In government at least, funding is a zero sum game; if more goes to mineral inventories, less goes elsewhere.

There is a need for more networking and therefore compatibility of data is essential. The key is to get access to common data without having to re-collect it.

W. Sellmer: (VP Western Operations, Canamax Resources Inc.) gave an industrial users perspective, as a former employee of Amax, which set up a large, broad coverage, data base; and as a Canamax associate, which is a smaller firm. Each had different objectives and could sustain different costs. It takes a number of years to assemble accurate information about any mineral area; i.e. information that is sufficient to lead to new discoveries.

In general both types of companies wanted:-

I. To get as large a percent of the total data base as possible.

II. To get out to the field location and to determine if it was really there.

Industry would like to be able to get back to the original references. The prime interest is in the provincial government data bases.

The cost to a small company of setting up its own files could be prohibitive and is only justified by reaching some specific objective. The need for accuracy in available files, for good and possibly annotated bibliographies, and for currency of files by their revision was noted. Most files used provided relatively good information, but a small company's requirement for a stand-alone national file was questioned.

General Discussion

The general discussion covered only a few new points, although there was elaboration of ideas. Some elements from the discussion follow:-

A. Sutherland Brown drew attention to a large constituency of prospectors and small developers, from whose ranks many new properties have been discovered. This group cannot build substantial mineral inventory files; therefore they are important users of provincial files. For them the cost must be kept very reasonable. He also elaborated on the problems of confidentiality and conflict of interest and pointed out provincial workers in British Columbia could not stake claims.

J. Garnett stated we needed coordination between file builders but they needed diversity (e.g. not much coal in Ontario or Quebec). There was also a need to identify the size and content of central Federal files.

W. Hutchison (ADM Earth Science, EMR) thought there had been progress in the decade and emphasized technology no longer was a problem but the cost of building and cleaning files was. He would like some measure of the effectiveness of existing files; how many new mine discoveries were significantly aided by use of files?

There has been an immense amount of data generated in the last 10 years, so this meeting is timely. Yet we must keep in mind why we are building these files, that the input is labour intensive, and the quality of information is a prime factor.

R. Cathro EMR should not become a subdistributor for certain information which can be purchased as a package from private industry. In general, confidentiality is not a substantial problem.

A. Coope also believed confidentiality was not a problem. He did not think we were here to debate the need for a data base but to encourage cooperation and communication.

R. Price The principal challenges in establishing a national mineral inventory data file system are to identify the specific kinds of information that the various user and producer groups hold in common as matters of high priority; and then to find mechanisms for sharing access to the information that is of common interest. Some form of "network" amongst various data bases, or by the establishment of a central data base might solve the problem.

N. Lyttle Did not foresee the provinces getting out of file building. The advantages of any national inventory system outweighed drawbacks. He supported D.C. Findlay's model B, i.e. all provinces and interested companies feeding data into a central Federal file. He drew an analogy to GEOSCAN and said we should work quickly toward common codes and standards.

A member of the audience thought we were not here to debate the need for these things but to settle them.

5. CHAIRMEN'S SUMMARIES

GENERAL CHAIRMAN'S SUMMING UP by C.G. MILLER

It seemed that several themes emerged from this Workshop. I would like to outline them and then propose some resolutions or conclusions from the meeting.

The major issues uncovered are as follows:

1. These data files have a high degree of utility to the exploration industry. They need to be preserved and enhanced and made more effective and efficient. It is clear that the various systems, whether federal, provincial, or private, need to be linked in some way. Whether they should be totally integrated or whether many systems should exist with a common core of materials, is an open question.

2. It is quite clear that the existing files and systems should be maintained and nurtured to prevent the decay of a useful asset.

3. System compatibility is an issue. Existing systems are running on different kinds of hardware. This may not represent a big disadvantage nowadays; however, the software should be made compatible wherever possible and the design of collection and input forms must be standardized. In addition, an increasing degree of coordination should be exercised. Dissemination of the information should be as wide as possible, but aspects of confidentiality are sometimes involved.

4. The roles of the different actors need to be more clearly defined. There may be some overlap between federal and provincial authorities at present, and the role of industry as a user and generator of information is not totally clear. The need for personal contact and local familiarity may

argue for the use of private sources. Comprehensiveness and accuracy are both vital. These can be accomplished within a given filing system by private means. However, on a national basis public data files may accomplish these goals more fully. It is clear that the continuity of data files is important. It is less clear whether a commercial asset or a non-profit data base in the public sector has a better chance of survival. Should the availability of data files be considered a public good or a private service which is commercially self-sustaining? Is a subsidy justified? Should there be incentives for the collection of private data bases? Should small prospectors have access to public data bases for a very small fee?

5. Many of these issues were crystallized by D.C. Findlay's presentation. His presentation warrants further study.

6. Adjectives which have been used today to describe the perfect data base include comprehensiveness, compatibility, accuracy, quality, priority, and economy, as well as currency. Dr. A. Coope has properly pointed out that diversity is also required since theories and needs change over time. There are trade-offs between these goals; some wisdom is going to be needed to establish the right kind of data bases for the right uses.

7. In attempting to define the outcome of today's Workshop, I would like to put four propositions before you:

   (a) I'm sure you will want to join me in unanimously thanking the Prospectors and Developers Association for facilitating this meeting and for making time available to us in connection with their Annual Convention. I also wish to thank the sponsors – the Geological Survey of Canada and the Mineral Policy Sector, as well as the three organizers. It has been a most useful meeting.

(b) I suggest the Workshop may wish to send a message to federal and provincial governments to the effect that data files are considered important. We could advise the two levels of government to maintain the existing systems and to ensure that they are given enough resources to maintain themselves in a current state. Some improvements are possible in the coordination of effort between the two levels of government.

(c) I believe the written report from this meeting should reflect the interests of all parties, that is the Earth Science Sector, which tends to use data files for research purposes; Mineral Policy Sector which uses data files for policy purposes; the provinces which administer mineral resources; and the exploration industry which needs access to the best information. Moreover, the written report should be a useful input to the next steps, which could take the form of a more detailed workshop on Coordination Mechanisms.

(d) I propose a further meeting, a shirt-sleeve working session, to define the possible parameters of a national system of data bases. It should focus on the needs of the exploration industry but should be prepared to coordinate with the needs of other groups. The meeting should consider all the issues which have been identified at this Workshop, including the role of a public and private sector. The most appropriate body to organize such a workshop is not clear. It might be appropriate for GSC and MPS to carry on to the next level. If so, the planning should incorporate people from the provinces and from industry.

PANEL CHAIRMAN'S SUMMARY by A. Sutherland Brown

In addition to a desire for a future, small, working meeting, the audience had a measure of consensus and the tenor of papers and discussion appeared to favour the following:-

1. Almost all appeared to agree there needed to be central Federal mineral inventory files for strategic purposes but that they should probably-
   a) be merged
   b) cover only significant deposits
   c) be available to the public
   d) rely on, or be integrated with, provincial input.

2. Support for provincial files was as strong as the criticism of them for inaccuracy. The consensus was that the governments of the major mineral provinces should increase their priority given to these files. It was evident they are a starting point for Federal and commercial files. Integration of assessment reports with existing data and titles would be highly desirable.

3. Many participants desired merging or networking of provincial, federal mineral files and GEOSCAN.

4. There was tacit assumption that custom files would (must) add something more than government files, presumably accuracy and depth. They do not compete in price, as government mandates appear to insist on availability to prospectors and small operators.

5. All participants seemed to desire increased accuracy, standardization and compatibility of data files.

A REPORT OF A WORKSHOP ON

MINERAL INVENTORY DATA FILES

Toronto, March 14, 1985

Geological Survey of Canada
Open File 1173

Compiled by

L.M. Cumming
Economic Geology and Mineralogy Division, Ottawa

and

A. Sutherland Brown
Consultant, Victoria, B.C.

PART II

APPENDIX

6-1

National Mineral Inventory

R.J. Shank

National Mineral Inventory (NMI) is the oldest and largest publicly accessible databank on Canadian mineral occurrences with its origins within the Department of Energy, Mines and Resources, dating to before 1900 when the need for recording Canada's growing number of mineral discoveries was realized. The NMI file grew intermittently, with upsurges in activity towards the end of each World War when the inadequacy of existing mineral occurrence information became apparent as mineral shortages developed. Following a postwar period of dormancy, NMI was revived in 1959 and has operated continuously since with the goal of completing records on all Canadian mineral occurrences. The task is not finished after some 19,000 records have by now been put on file with accession and updating continuing.

The currently used 8.5" by 11" NMI card contains comprehensive information on name, location, work history, geology and references, typed on a standard format. The format and content have evolved over the years from originally a 5" by 3" index card recording only the deposit name, locality and references; the first comprehensive format and filing system was devised in 1918 and is now referred to as the "old" format; finally, in 1959 the card format was redesigned and the NTS filing system adopted. The guidelines as to the information to be recorded on the cards have likewise evolved from minimal to comprehensive coverage, with emphasis on the history and results of work done on deposits, in order to depict the

economic potential as fully as possible. The last major review of the form and content of NMI was held in 1963 when a committee of experts from government and industry approved the 1959 format.

The MINSYS computer system has been developed to produce indexes for retrievals from the card file by one or any number of the identifying and descriptive characteristics of occurrences coded into the system, and to provide occurrence plots. MINSYS can stand alone as a shallow mineral occurrence data file, in the form of tabular printouts and individual record dumps. It is also useful for cross-indexing with the provincial inventories and to adopt provincial records where the equivalents do not exist in NMI.

NMI's other responsibilities include updating yearly editions of "Map 900A, Principal Mineral Areas of Canada", published jointly with GSC (Geological Survey of Canada), and "Canadian Mineral Deposits not Being Mined", updated and published every three years, the last in 1983. Both are very popular departmental publications, the latter being derived for the most part from NMI's inventory records.

Beginning in the late sixties, most provincial governments launched their own mineral inventory systems. This posed new challenges to NMI and eventually led to changes in our internal work priorities. Efforts by NMI to impose a national standard, in order to maintain uniformity and avoid duplication, succeeded partly when two provinces (Manitoba and Newfoundland) complied, while others opted for their own format design.

Good co-operation on data exchange agreements, mostly of an informal nature, has been maintained with the provinces, although now the role is reversed in some cases, whereby NMI is the major beneficiary of systems which it helped to create. These developments have led to change in NMI priorities in order to minimize duplication. It is now our policy to simply adopt in MINSYS the minor occurrences which form the largest number in any inventory described by the provinces. This leaves us time to concentrate on the segment of important and high-potential status deposits and those of strategic importance.

The basic data compilation of NMI cards is a slow and painstaking process requiring tedious searches and verification of sources in order to assure reasonable completeness and credibility. As numbers of records increase, more time must be spent on update and hence less time is left for creating new records. With current staff of eight people, of whom only six are engaged full-time in production of inventory records and the derivative compilations, progress in covering all of Canada is slow. Yet, management has questioned committing even that number of people to a project whose apparent users and beneficiaries were few and their potential total number unidentified. For, NMI records, while available on open file for years, were not advertised to the public until recently. The largest users outside EMR were the provincial governments, while use by private sector has been sporadic, with only three customers subscribing to the entire file and updates. Thus, following an internal evaluation and subsequent consultant's report, it was decided to publicize NMI's work to the mineral industry, to whom the cards are particularly suited because they stress

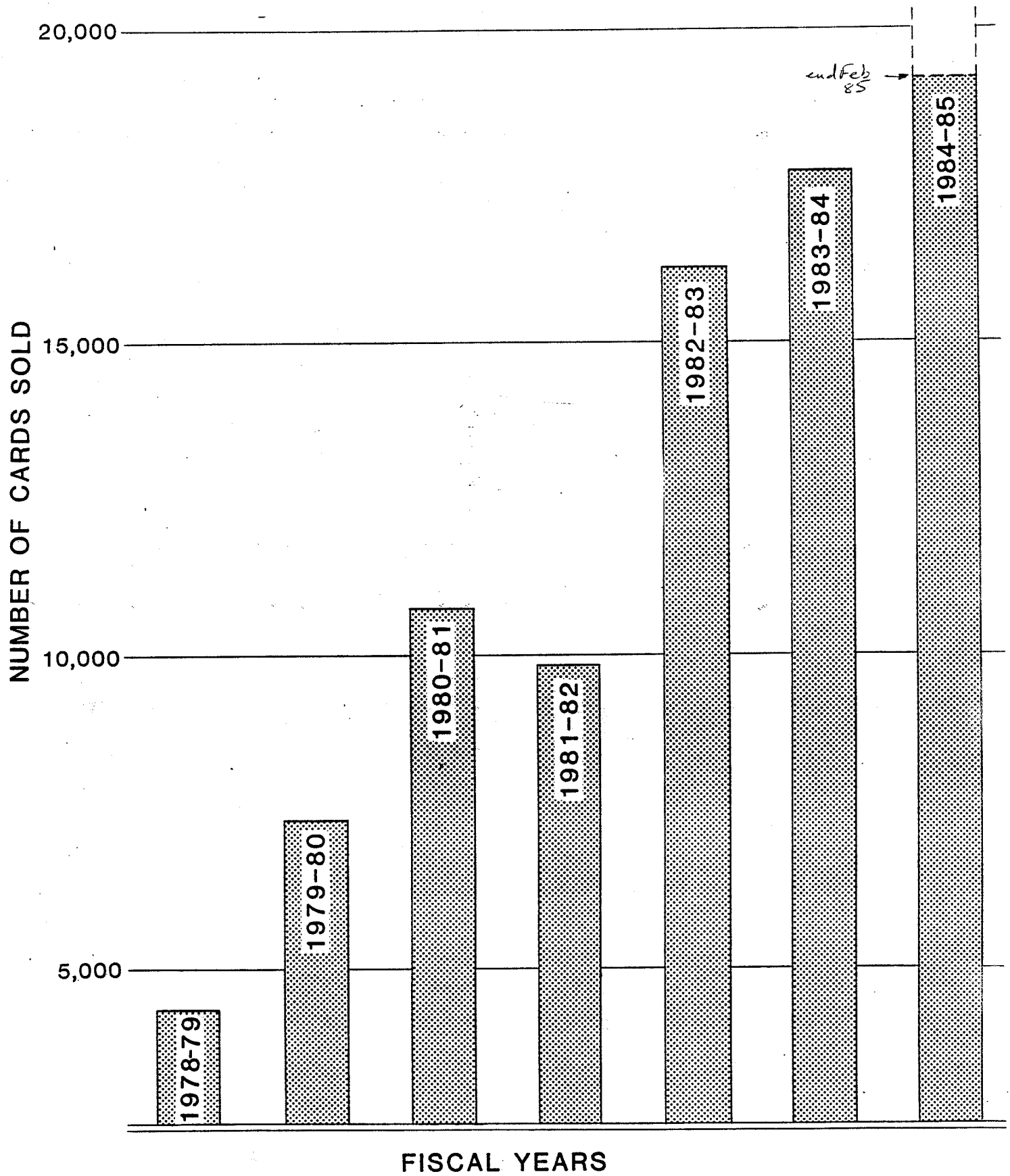
work done on and the economic potential of mineral occurrences. Accordingly, about two years ago, NMI first started publicizing its services through handouts and later by holding displays at various gatherings, such as the PDA convention, of mining and exploration people. Then, in a major publicity push late in the fall of last year, information kits were mailed directly to 3,000 mining executives and at the same time ads were placed in several trade journals and in GSC's notice of publication. The response, particularly to the direct-mail campaign was encouraging, resulting in a few substantial card orders, as well as of a number of MINSYS outputs and tapes. Also, the large number of orders received for copies of "Canadian Mineral Deposits not Being Mined in 1983" required a reprinting of that publication.

While pleased with the results of the publicity drive, we would like to see even more use being made of NMI's mineral occurrence cards by the mining industry, in order to justify the cost of the existing level of inputs and even of increasing it.

We feel that the uniform standard and format of NMI cards, together with the historical and economic data, should fill the requirements of people and organizations in the business, especially those working across provincial boundaries.

There has been a steady increase in annual sales of NMI cards, this in addition to free material going to various agencies in the two major levels of government. The attached chart illustrates this trend.

SALES OF NMI CARDS TO THE PUBLIC



A sufficient level of interest and use of NMI cards by the mining fraternity would justify modernizing and improving service to customers, as well as speeding up completion of coverage. Retrieving and updating card content could be handled efficiently on-line with quality printer hard copy reproduction. Microfiche copying could be made available as an alternative. The computerized text system could be linked to MINSYS which could be transferred from the currently used rigid S2K hierarchical system into a relational database allowing for much flexibility in processing and cost efficiency in creating a wide range of report formats.

March 1985

Energy, Mines and Resources Canada | Energie, Mines et Ressources Canada

The National Mineral Inventory

Canada

The National Mineral Inventory (NMI) of the Department of Energy, Mines and Resources in Ottawa has made available a series of comprehensive records and services as a major support for mineral exploration activity in Canada.

The reports and services provide valuable data on mineral deposits and are an excellent way of keeping informed on current finds and trends in mineral exploration. The information material can be used to:

- assist mining exploration companies and prospectors in planning their programs
- select exploration targets
- provide a base for resource studies and development of any area or province

Services

1. National Mineral Inventory Cards comprise the largest file available on Canadian mineral occurrences. Information in the inventory is recorded on NMI cards, which are in standard format and are continually updated to provide uniform coverage of more than 19,000 deposits across the country. Information on NMI cards is recorded as follows:

- Name and location of deposit
- Owner or operator
- Description of the deposit
- Associated minerals or products
- History of exploration and development
- History of production
- References

Mineral inventory cards may be ordered by the public to their specifications. For example, an order could be placed for "all gold occurrences in Ontario" or "all gold occurrences in 73F/16 and 74A/1".

The files for Quebec, New Brunswick, Manitoba and parts of Ontario are available in English and French editions. Information for other regions is available in French only on request.

The complete card inventory can be purchased on request and arrangements can be made for those holding the complete set of NMI cards or segments of sets to receive updates automatically.

2. Mineral Deposit Information System (MINSYS) is a computer database file containing key information derived from the NMI cards. The computer system provides flexibility in search and retrieval of mineral deposit information in a package most suitable to the client/customer.

For convenience the data in MINSYS may be ordered in several formats for a nominal charge.

Printouts in columnar or tabular form. Specific information may be printed from the computer as a special order, run in columns or tabular form by:

- commodity
- NTS area
- deposit status
- other key characteristics in any user-specified order

The index to the NMI card packages may be supplied as a special order.

Magnetic tape. The complete database is available on magnetic tape.

Graphic plotting of mineral occurrences. To assist in the production of reports and publications, information in MINSYS can be further processed to supply a graphic plotting of mineral occurrences.

3. Map-900A — Principal Mineral Areas of Canada Map 900A is issued jointly by the Mineral Policy Sector and the Geological Survey of Canada. It is published annually in French and English editions, and free copies are available on request.

4. Canadian Mineral Deposits not Being Mined in 1983 — This valuable report lists potentially mineable deposits of metals and some nonmetals that were not in production nor committed for production in 1983. Based on available resource figures, this document compiles in tabular form the location, geology, work done, tonnage and grades of 1579 mineral deposits by province and territory. Individual copies of the 1983 edition are available in English and French at a charge of five dollars. (see green order form)

5. Information and Assistance — The staff of the National Mineral Inventory will be pleased to respond to enquiries from industry and the public about mineral occurrences, mining properties, and companies and general mining and exploration activities. For further information and assistance please contact:

National Mineral Inventory
Mineral Policy Sector
Energy, Mines and Resources Canada
580 Booth Street, 11th Floor
Ottawa, Ontario
K1A 0E4

Telephone (613) 995-9466
Telex 053-3117

Énergie, Mines et Ressources Canada | Energy, Mines and Resources Canada

L'Inventaire national des minéraux

Canada

L'Inventaire national des minéraux (INM) du ministère de l'Énergie, des Mines et des Ressources à Ottawa offre à l'industrie minière une gamme de services et de renseignements détaillés et complets dans le but d'appuyer l'exploration minérale au Canada.

L'INM met à la disposition des intéressés de précieuses données sur les gisements de minéraux. Cette importante source de renseignements leur permet de se tenir au fait des découvertes récentes et des tendances actuelles en matière d'exploration minérale. Les renseignements peuvent:

- Aider les sociétés d'exploration minière et les prospecteurs à planifier leurs programmes;
- Les aider à choisir parmi différentes zones d'exploration;
- Fournir une base à leurs études sur les ressources minérales et leur mise en valeur, dans n'importe quelle région ou province du pays.

Services

Fiches du gisement. Chacune des [illegible] minéraux. Les fiches de l'INM constituent la source de renseignements la plus importante qui soit sur les gisements minéraux. Ces renseignements sont inscrits sur des fiches de format courant, celles-ci sont mises à jour continuellement de manière à refléter comme il se doit la nature des renseignements qui y paraissent, et qui portent sur 4 000 gisements d'un bout à l'autre du pays, soient uniformes. Les renseignements figurant sur la fiche de l'INM se présentent dans l'ordre suivant:

- Nom et endroit du gisement;
- Nom du propriétaire ou de l'exploitant;
- Description du gisement;
- Minéraux ou autres substances associés;
- Historique de l'exploration et de la mise en valeur;
- Historique de la production;
- Références.

Toute personne peut obtenir des fiches contenant les renseignements particuliers désirés. Ainsi, par exemple, elle peut commander les fiches de tous les gîtes d'or en Ontario, ou de tous les gîtes d'or situés à l'intérieur des coordonnées topographiques 73P/15 et 74A/2.

Les fiches pour le Québec, le Nouveau-Brunswick, le Manitoba et pour certains secteurs de l'Ontario sont disponibles en français et en anglais, tout comme celles des autres régions du pays. Tout renseignement en langue française est disponible sur demande seulement.

On peut acheter le fichier complet de l'Inventaire. Des dispositions peuvent également être prises pour que toute personne qui possède déjà l'ensemble des fiches ou une partie de celles-ci reçoive automatiquement les mises à jour effectuées sur ces fiches.

2. Système d'information sur les gisements de minéraux (MINSYS). Le MINSYS est une base de données informatique contenant des renseignements clés tirés du fichier de l'INM. Grâce à la souplesse du système, il est possible d'obtenir de l'ordinateur des renseignements sur les gisements sous la forme qui convient le mieux aux besoins particuliers du client.

Les données du MINSYS peuvent donc être commandées, moyennant un léger déboursé, sous diverses formes.

Imprimés en colonnes ou en tableaux. L'ordinateur peut, selon ce qu'on lui commande, imprimer les données spécifiques désirées sous forme de tableaux ou en colonnes. Les données peuvent être présentées selon:

- Le genre de minéral;
- Le secteur (Système national de référence cartographique SNRC);
- L'état du gisement;
- D'autres caractéristiques, dans n'importe quel ordre demandé.

L'index des ensembles de fiches de l'INM peut vous être fourni sur demande spéciale.

Ruban magnétique. On peut se procurer toute la banque de données sur ruban magnétique.

Présentation graphique indiquant où il y a des gîtes de minéraux. Afin d'aider à la préparation de rapports et de publications, il est possible de fournir, à partir des renseignements contenus dans le MINSYS, des présentations graphiques précisant l'emplacement des gîtes de minéraux.

3. Carte 900A — Principales régions minières du Canada. La carte 900A est émise conjointement par le Secteur de la politique minérale et la Commission géologique du Canada. Elle est publiée annuellement en français et en anglais. On peut en obtenir des exemplaires gratuits sur demande.

4. Gisements minéraux du Canada (non exploités en 1983. Ce précieux rapport énumère les gisements possiblement exploitables de métaux et de certains minéraux non métalliques qui n'étaient pas en production et que l'on ne s'était pas engagé à mettre en production en 1983. À l'aide des données disponibles sur les ressources, ce document fournit une compilation tabulaire de renseignements portant sur 1 579 gisements de minéraux répartis par province et par territoire, leur emplacement, les données géologiques, les travaux effectués, le tonnage et la teneur en minerai. L'édition de 1983 est disponible en français et en anglais au prix de 5 $ le volume (voir le bon de commande de couleur verte).

5. Renseignements et aide disponibles. Les membres du personnel de l'Inventaire national des minéraux se feront un plaisir de donner suite aux demandes de renseignements provenant tant de l'industrie que du public en général et portant sur les gîtes de minéraux, sur les propriétés minières, sur les sociétés minières et sur l'activité générale en matière d'exploration et d'exploitation minières. Pour plus de renseignements ou pour obtenir de l'aide, veuillez vous adresser à:

Inventaire national des minéraux
Secteur de la politique minérale
Énergie, Mines et Ressources Canada
580, rue Booth, 11e étage
OTTAWA (Ontario)
K1A 0E4
Téléphone: (613) 995-9465
Télex: 053-4117

6-2

CANMINDEX

D.F. Garson, R.M. Laramée

presented by D.F. Garson at P & D Mineral Inventory Workshop, March 14, 1985

Summary

The GSC's CANMINDEX system is a collection of manual and computer methods used to collect, collate, integrate and preserve the mineral deposits information required and used by the projects of the Economic Geology & Mineralogy Division.

The Economic Geology & Mineralogy Division of the GSC is involved in the study of Canadian non-hydrocarbon mineral deposits. This, in order to improve our geological understanding of mineral deposits and thereby provide support for mineral exploration and advise government on mineral resources. The scientific projects designed to accomplish this objective have, as a basic requirement, the availability of information on Canadian mineral deposits and occurrences.

Our CANMINDEX "system", and by that we do not mean computer system, is the tool or mechanism by which we provide our geologists with access to that information.

SLIDE #1 - CANMINDEX paper 78-8

During the conception of CANMINDEX, in the early to mid-seventies, the central goal was to compile a single, standardized computer-processable file of **index-level** data for all Canadian mineral deposits and occurrences, something which did not exist at the time. It was also intended that this file would act as the core or nucleus for **deeper-level** data files in the division.

At the outset, it was estimated that there were approximately 30,000 documented mineral deposits and occurrences in Canada and probably between 50,000 and 100,000 occurrences altogether. We predicted at the time that 100 person-years would be required to build the index-level file. The inconsistencies we encountered in and across existing mineral deposit data sources made us realize that it would require a much greater effort than was originally anticipated.

GEOLOGICAL SURVEY
PAPER 78-8

CANADIAN MINERAL OCCURRENCE INDEX (CANMINDEX) OF THE GEOLOGICAL SURVEY OF CANADA

D.D. PICKLYK
D.G. ROSE
R.M. LARAMEE

1978

Recognizing this, we were faced with a choice between covering the entire country quickly, and then coming back to polish it later or assemble the file at a more reasonable pace, assuring the quality of the data as we go. The life expectancy of the index-level information led us to choose the latter approach. Now, in order for the file to be of use before complete coverage was attained, we had to choose between coding the data on a commodity basis or regional basis. We chose the former, specifically in support of the "Copper File" project. Since that time data has been acquired and coded in support of several other projects. This approach explains the fact that we have good coverage for certain commodities and good coverage for certain regions, but no nation-wide coverage for all commodities.

Whichever projects we have compiled data for, all have one set of data in common - the index-level data. Also, each individual project has its own requirements for specialized data. Here's how we've handled that.

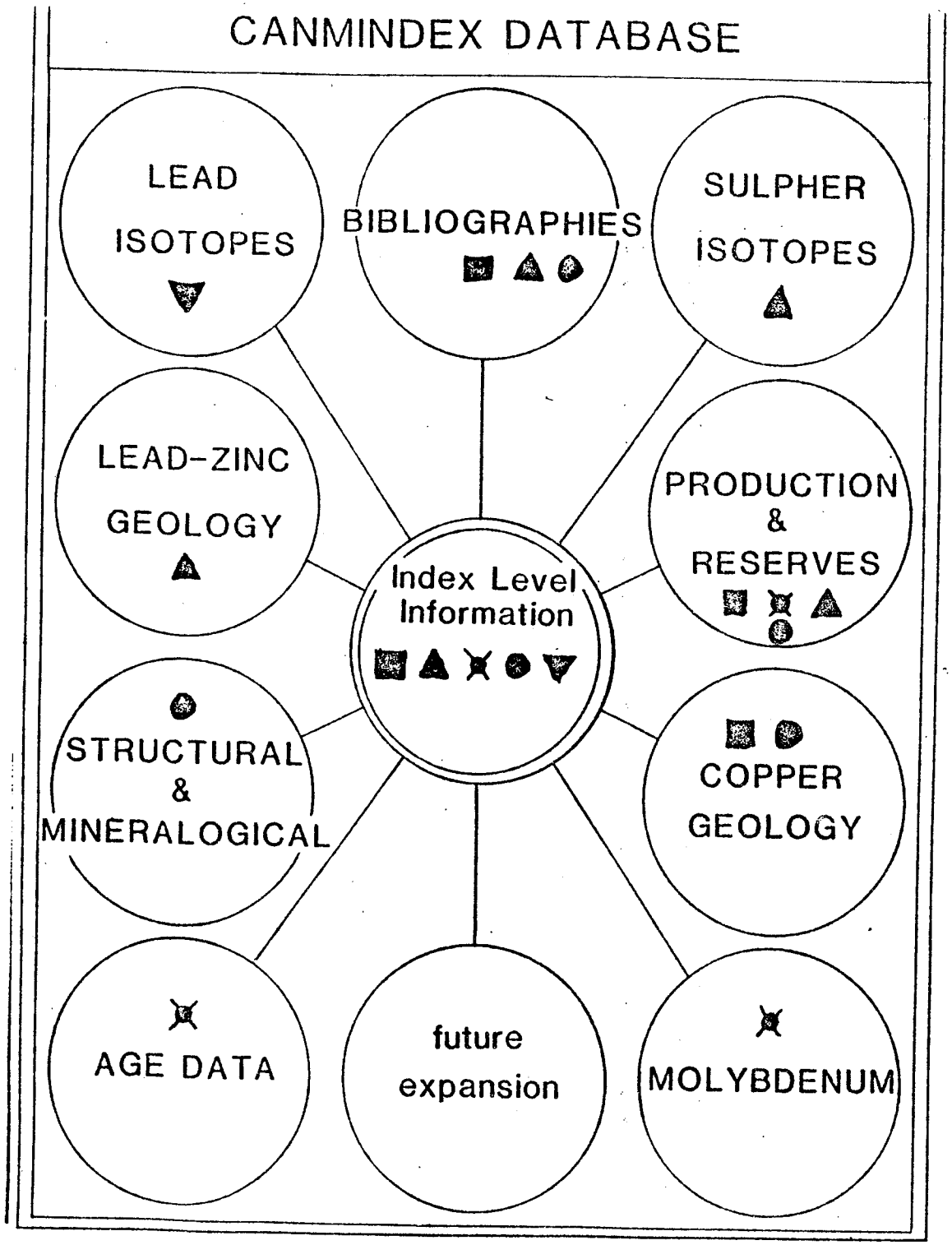
SLIDE #2 - CANMINDEX database

The project files are in essence windows on this database. The CUFILE, for instance, consists of identification and location information (the CANMINDEX file), geological data specific to copper deposit types (the COPPER GEOLOGY file), reserve and production data and bibliographic references. These are indicated by the green dots in the picture. Similarily, the PBZN file is represented by the red dots, and so on.

In summary then, this database is actually a collection of manuscript or project files and its coverage is a perfect reflection of the data compilation done in support of those projects. The keys are that these manuscript or project files share the common core of index-level information and the data that passes through the CANMINDEX system is preserved for use by other projects.

Recently, our job has become easier in that there have been assembled numerous mineral deposits databases across the country, including one nation computer database - MINSYS. The emphasis for us has changed from compiling mineral deposits data from scratch to using these existing mineral inventories (both manual and computerized versions). This way, we can provide our geologists with one channel of access to all those sources of information on Canadian mineral deposits.

SLIDE #3 - computer plot of 29,000 occurrences



Pb-Zn file

Pb-Isotope file

Copper file

Molybdenum file

Pearson file

Before coming to this workshop, we wanted to see pictorially the locations of all the mineral deposits and occurrences for which we had data in our "library" of computer files. This includes portions of CANMINDEX, and several provincial files.

Our CANMINDEX system is the means by which we provide the geologists and their project with the mineral deposits data. The end product of this system comes, not directly from the database, but rather from the integration of this data with the geologists own data, his knowledge and his theories. **The products** are in the form of GSC publications such as GSC Paper 81-12, Copper Deposits in the Yukon Territory by Dr. R.V. Kirkham, J.J. Carriere and Dr. W.D. Sinclair.

SLIDE #4 - "sample output" diagram

You'll notice that I've come right back to the driving mechanism of the CANMINDEX system - a GSC project.

Now that all looks relatively simple and straightforward, but let's look further. That's what we're doing now - looking at some basic and yet unresolved problems that we all face.

pause

Let's assume that we know where occurrences are located to the nearest mile (1.8 km). This represents a location accurate to the nearest minute of latitude and longitude. ***(SLIDE #5 - computer plot of 29,000 occurrences)*** Based on that, we would expect to find approximately 3% of those 29,000 points to fall exactly on an NTS 1:50,000 map sheet boundary. We made the test on the locations of these points and discovered that approximately 22% of them actually fell on those boundaries. Assuming that half of the points that lie on the boundary of the sheet in which you're interested have been classified as belonging to the next NTS block, then a retrieval based on NTS 1:50,000 will miss a good 10% of the data that lies in that block. Definitely something to think about.

Let's talk about mneumonic codes. We've been trying to get away from using such codes because modern technology has allowed us to do so. But in many files, these codes still exist, for example, to represent mineral names and rock names. As well, such code systems are being re-introduced as space-saving measures for microcomputer-based files. There are standard methods to generate these codes (for example, the Franklin method), but there is no standard algorithm for handling collisions or duplicate codes. Therefore, each file builder has had to arbitrarily assign some abbreviations. How do you merge several of these files into one database without creating a "BABEL" tower. This is enough of a problem and we haven't even considered undocumented or forgotten codes.

Regarding the accuracy of existing maps: the automated posting of mineral occurrences on existing geological maps is impaired by these problems: 1) the cartographic parameters of some older maps are unknown or not documented, or the map was produced without a rigorous application of cartographic techniques, 2) the posting of geological features may not be sufficiently accurate and 3) the location of the mineral occurrence may not be accurate.

This creates the following scenario in which a geologist, familiar with an area under study, will introduce a correction to a location, based on a computer-plotted point falling in the wrong geological unit. This correction might later find its way back into the database, effectively replacing good data with bad, even though the location data was correct (i.e. the map was wrong).

Microcomputers - our first microcomputer was acquired late in 1976 as a data entry device. That was a 16K, 8-bit diskette machine with a tiny screen. Later we added a more powerful machine - 128K, 8-bit, hard disk - for use as an intermediate and post-processor of information.

Today, we are using 16-bit MS-DOS machines for a variety of tasks including database management. We are using them for verifying and testing data flowing through the CANMINDEX system. We have also started providing individual geologists with computer files on microcomputers for his or her specific project.

Needless to say, these microcomputers have some attractive features, namely, user-friendliness, they are easily-accessible and a tremendous variety of software is available. However, there are a few hidden dangers. Consider this scenario - two geologists obtain overlapping subsets of information on their microcomputers from a common database, say CANMINDEX. One geologist perhaps decides to change the names or locations of some deposits based on his

knowledge of the area, incorporates this data with his own, and publishes it. This becomes new source of data #1.

The other geologist leaves the locations and names as they are, integrates his data and publishes his own paper. New data source #2.

They both cite CANMINDEX as the source of data, but with differing data. How can we handle that? It indicates a need for a feedback and control mechanism for all involved in the mineral inventory business.

To summarize then, here is an outline of the process we have followed.

In 1975, the CANMINDEX file structure was designed in accordance with the requirements of the research scientists of our division. A prototype file was assembled and then tested. Consultation took place with other agencies in the field via a federal/provincial workshop in Ottawa.

In 1976, revisions to the design were made leading to the file organization we use today.

Today, in 1985, our database can be considered a mature one, not in terms of coverage, but rather as a database whose internal organization has remained constant for several years and which has more or less withstood the test of time.

Based on our experience in using data in CANMINDEX during these years, we realize that our database does not perfectly reflect the intrinsic structure of the indformation. We are looking for ways to improve it. We're sure that in the coming years we'll find answers to the problems we've outlined, as well as other problems which will undoubtedly crop up. We would like to work together with all of you in this business in hopes of resolving these problems in the near future.

6.3

MINFILE

THE BRITISH COLUMBIA COMPUTERIZED MINERAL INVENTORY SYSTEM

A PAPER PRESENTED AT THE WORKSHOP ON
MINERAL INVENTORY DATA FILES, IN CONJUNCTION
WITH THE 53RD ANNUAL CONVENTION
OF THE PROSPECTORS AND DEVELOPERS ASSOCIATION.
MARCH 14, 1985
TORONTO, ONTARIO.

BY ALLAN F. WILCOX
BRITISH COLUMBIA
MINISTRY OF ENERGY, MINES,
AND PETROLEUM RESOURCES.

MINFILE - THE BRITISH COLUMBIA COMPUTERIZED MINERAL INVENTORY SYSTEM

GOOD MORNING LADIES AND GENTLEMEN, I WOULD LIKE TO TAKE THIS OPPORTUNITY TO THANK THE BRITISH COLUMBIA GOVERNMENT FOR ALLOWING ME THE TIME TO COME HERE TO PRESENT THIS PAPER TO YOU.

A MINERAL INVENTORY CONSISTING OF A SERIES OF MINERAL DEPOSIT MAPS AND A CORRESPONDING CARD FILE WAS STARTED BY THE GEOLOGICAL BRANCH IN 1967. THIS WAS A MANUAL CARD FILE CONSISTING OF ONE CARD PER DEPOSIT, AND THE INFORMATION INCLUDED: 1) IDENTIFICATION; 2) LOCATION; 3) HISTORY OF DISCOVERY; 4) STATUS OF MINING OR EXPLORATION; 5) WORK HISTORY OF PROPERTY; 6) REFERENCES; 7) GEOLOGICAL SUMMARY AND 8) DETAILED GEOLOGY USING 15 DESCRIPTIVE PARAMATERS. THIS SYSTEM WAS DIFFICULT TO USE AND COMPLETE SO IN 1969 PLANS WERE MADE TO REDESIGN THE FORMS USED FOR DATA CAPTURE TO MAKE THE FILE COMPATABLE FOR COMPUTERIZED STORAGE AND RETRIEVAL USING LOCATION, STATUS, REFERENCES AND GEOLOGICAL SUMMARY. BY WORKING WITH THE CURRENTLY ACTIVE PROPERTIES, THE MINISTRY PLANNED TO OBTAIN AS COMPLETE A COVERAGE OF THE PROVINCE IN AS SHORT A TIME AS POSSIBLE.

MINDEP WAS A RESEARCH PROJECT INITIATED BY THE DEPARTMENT OF GEOLOGICAL SCIENCES AT THE UNIVERSITY OF BRITISH COLUMBIA IN SEPTEMBER 1973, AND INITIALLY FINANCED PRIMARILY BY RESEARCH GRANTS FROM THE MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES AND THE FEDERAL DEPARTMENT OF ENERGY, MINES AND RESOURCES TO DRS. H.R. WYNNE-EDWARDS AND A.J. SINCLAIR. THE OBJECTIVES OF THE PROGRAM WERE TO DEVELOP A COMPUTER-PROCESSIBLE MINERAL DEPOSITS DATA FILE, AND TO DESIGN METHODS FOR DATA RETRIEVAL AND MANIPULATION. THE PROGRAM WAS UNDER THE MANAGEMENT OF DR. J.H. MONTGOMERY, A VANCOUVER BASED CONSULTING GEOLOGIST. THE MINERAL INVENTORY CARDS MAINTAINED BY THE MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES BECAME THE MAIN SOURCE OF BASIC DATA FOR THE MINDEP PROJECT; IT ALSO INCORPORATED DATA OBTAINED FROM AN INDUSTRY SUPPORTED B.C. MINERAL INVENTORY FILE POPULARLY REFERRED TO AS THE "MACDONALD FILE".

MINDEP WAS TRANSFERRED FROM THE UNIVERSITY OF BRITISH COLUMBIA TO THE COMPUTER FACILITIES OF THE BRITISH COLUMBIA SYSTEMS CORPORATION IN 1976. WITH THIS TRANSFER, THE FILE WAS RENAMED MINFILE AND THE TASK OF MAINTAINING DATA ENTRY, AND UPDATING BECAME THE SOLE RESPONSIBILITY OF THE RESOURCE DATA AND ANALYSIS SECTION IN VICTORIA.

MINFILE - Existing Data Fields

At the present time, there are approximately 8800 mineral occurences listed in MINFILE; 50-100 new occurences are added each year and last year 3500 properties had some form of revision done to them.

Present Output

This is what a typical MINFILE printout looks like.

MINFILE - Existing Data

The existing data is divided into four main catagories: Deposit ID; Economic Attributes; Geology and Bibliography/References. Inquiry into the system is by batch mode and limited searches may be carried out on the following data fields:

- NTS
- Mining Division
- Minfile Number
- Commodities Present
- Minerals Present
- Reserves
- Production

Existing Minfile - Faults

There exists a number of problems with MINFILE as it now exists.

Batch Input/Output

Problems with file structure when converted from Honeywell to IBM.

When the data was transferred from UBC to the British Columbia Systems Corporation in 1976, the data resided on Honeywell Series 6 Computers and the programs to manipulate the data were written in COBOL. In 1981, the British Columbia Systems Corporation changed operating systems from Honeywell to IBM. With this conversion the programs were also rewritten from COBOL to PL1, while operating under the Honeywell environment the file was split fairly efficently into seven linked files. When the programs were rewritten in PL1 no thought was given whether or not these seven files were an efficient method of storage and retrieval for the IBM operating system. As a result, it now costs us over $3,300.00 to make a backup copy of our tape.

Limited Search Capabilities

As noted before, you can only search on a limited number of fields. A limited combination search is possible. You may choose ONE of the following: deposit type
mineral code
commodity.

to be combined with ONE of the following: map sheet ID
mining division
NTS

the default is all of British Columbia.

Data Incomplete for some deposits

The biggest problem is that the data is not always complete for some deposits. The largest area where this occurs is status and deposit type. In most cases, the status is not very accurate and is not at the present time updated as often as it should be. A problem also exists right now with the accuracy of our UTM coordinates. The present MINFILE is based more on the older more established latitude/longitude and an error occurred in one of the conversion stages when converting to UTM that has not been corrected at the present time.

Minfile Redesign Objectives

At the present time, MINFILE is undergoing a redesign to serve five main functions.

1) In conjunction with the Ministry's five-year plan to provide a better inquiry base for mineral inventory data for Ministry and industry use.

2) To eliminate the previously mentioned long term problems caused by the conversion of the data base from Honeywell to IBM.

3) To be able to down-load parts of the data base onto personal computers for use by individual geologists. The project and district geologists will be able to update and add new information directly.

4) To provide graphic output capabilities.

5) And to provide a lead into "expert" systems.

MINFILE REDESIGN PROPOSED DATA FIELDS

MINFILE REDESIGN DATA

AS YOU WILL HAVE NOTICED THERE ARE A LOT MORE PROPOSED DATA FIELDS THAN WHAT CURRENTLY EXISTS IN MINFILE. THE VAST MAJORITY OF THE CHANGES OCCUR IN THE GEOLOGICAL FIELDS. I WILL MENTION A FEW OF THE NEW MAJOR PROPOSED FIELDS AND DIFFERENCES FROM THE EXISTING MINFILE.

THE MINERALOGY SECTION WILL BE DIVIDED INTO THREE SECTIONS: ECONOMIC MINERALS; GANGUE MINERALS AND ALTERATION MINERALS AND TYPE OF ALTERATION.

THE DEPOSIT TYPE HAS BEEN SPLIT INTO DEPOSIT TYPES AND THE MORE SUBJECTIVE GENETIC TYPES, BOTH THESE WILL BE REPEATABLE TO ALLOW FOR MORE THAN ONE DEPOSIT TYPE SUCH AS A STRATABOUND/MASSIVE.

THE HOST ROCK SECTION WILL ANALYZE AND DESCRIBE THE CHARACTERISTICS OF THE HOST ROCK AND PROVIDE SPACE FOR AGE OF MINERALIZATION.

WE WILL ALSO ATTEMPT TO COLLECT INFORMATION ON REGIONAL METAMORPHISM AND METAMORPHIC GRADE AND THE GEOLOGICAL TERRANE ASSOCIATED WITH EACH DEPOSIT.

MINFILE REDESIGN ADVANTAGES

THE REDESIGN OF MINFILE BRINGS SEVERAL ADVANTAGES WITH IT, BOTH FROM A COMPUTERIZATION STANDPOINT AND A GEOLOGICAL STANDPOINT.

1) THE NEW MINFILE WILL BE A RELATIONAL DATA BASE AS COMPARED TO A HIERARCHIAL ONE.

2) THE DATA WILL BE TABLE DRIVEN.

3) IMPROVED SEARCH CAPABILITIES IN THAT ALL FIELDS WILL NOW BE RETRIEVABLE AND COMPLICATED SEARCHES USING BOOLEAN LOGIC WITH NESTED INQUIRIES WILL BE POSSIBLE.

4) WE WILL BE USING A FOURTH GENERATION SOFTWARE/DATA BASE MANAGEMENT SYSTEM TO MANIPULATE THE DATA.

5) WE WILL BE ABLE TO PROVIDE ALL MANNERS OF GRAPHIC OUTPUT.

6) A DIRECT LINK WILL BE PROVIDED TO OTHER GOVERNMENT DATA BASES SUCH AS THE MINERAL TITLES SYSTEMS, THE INSPECTION AND ENGINEERING SECTION AND MINERAL POLICY SYSTEMS FOR PRODUCTION DATA.

HARDWARE

THE STEERING COMMITTEE HAD BASICALLY ONLY TWO CHOICES TO MAKE WHEN IT CAME TO A DECISION ABOUT HARDWARE ON WHICH TO OPERATE THE REDESIGNED MINFILE. WE COULD GO WITH ANOTHER COSTLY REWRITE OF THE PROGRAMS AND REMAIN ON TIME-SHARING ON IBM EQUIPMENT WITH BRITISH COLUMBIA SYSTEMS CORPORATION OR WE COULD MAKE USE OF EQUIPMENT ALL READY AVAILABLE IN-HOUSE. WHEN CONFRONTED WITH THESE CHOICES, IT WAS FELT THAT WE HAD NO CHOICE BUT TO MAKE USE OF THE VAX 11/730 MINI COMPUTER ALREADY INSTALLED WITH *VAX.*

VAX

VAX 11/730 MINI COMPUTER ALREADY INSTALLED

INTERGRAPH,

TWO INTERGRAPH COMPUTERIZED DRAUGHTING STATIONS. THESE MACHINES WERE PURCHASED FOR THE AUTOMATION OF THE MINERAL TITLES BRANCH.

CALCOMP 1076

THE MINISTRY ALSO HAS A CALCOMP 1076 36" DRUM PLOTTER FOR PROVIDING LARGE SCALE MAPS.

RESOURCE DATA AND ANALYSIS SECTION ALSO HAS AN IBM-PC-XT WITH A 10 MB HARD DISK, AN EIGHT PEN ZETA PLOTTER AND THEIR OWN DIGITIZING TABLE; AS WELL AS DEC VT 102 AND VT 240 TERMINALS CAPABLE OF ACCESSING THE VAX.

NTS 585

THE MINISTRY HAS ALSO ACQUIRED A NORTHERN TELECOM 585 MICROCOMPUTER WITH

TAPE DRIVE AND

HARD DISK

A SYSTEM SIMILAR TO THIS CALLED A MICRO-VAX MAY BE THE ULTIMATE RESTING PLACE OF MINFILE, WITH DATA BEING ABLE TO BE FREELY PASSED BETWEEN THE MICRO-VAX AND THE VAX FOR ROUTINE MAINTENANCE AND GRAPHICS.

SOFTWARE

FINAL EVALUATION OF SOFTWARE HAS NOT TAKEN PLACE, BUT WE ARE LOOKING AND EVALUATING THE FOLLOWING PACKAGES:

ORACLE
FOCUS
POWERHOUSE
DBASE II/III
RBASE 4000/6000

DURING THE LATTER WEEKS OF JANUARY AND THE BEGINNING OF FEBRUARY ONE PRODUCT ORACLE WAS GIVEN A THOROUGH EXAMINATION. THE FOLLOWING SLIDES ARE SOME OF THE SCREENS THAT WERE PUT TOGETHER FOR THE PURPOSE OF EVALUATING THE PRODUCT. FOR THE PURPOSE OF THIS EVALUATION WE CHOSE 50 DEPOSITS FROM ONE AREA (82M) WHICH HAD BEEN LOOKED AT THE PREVIOUS SUMMER BY A GRADUATE STUDENT AND FOR WHICH WE KNOW THE DATA TO BE FAIRLY COMPLETE.

MAINTENANCE

DEPOSIT ID

MINERAL DATA

GEOLOGY

COMMODITY

TEXT

RESERVES

PRODUCTION

BIBLIOGRAPHY

YOU ARE ABLE TO PERFORM SEARCHES VIA YOUR MAINTENANCE SCREENS OR YOU CAN PERFORM SEARCHES BY USING SQL STATEMENTS IN UFI (USER FRIENDLY INTERFACE). THESE SEARCHES MAY ALSO BE STORED AS VIEWS AND HAVE THEIR OWN SCREENS GENERATED.

MINFILER

MINFVHY3 ALL VEIN DEPOSITS CONTAINING GALENA

MINFVHY2 ALL CAMBRIAN AGED CARBONATE HOSTED DEPOSITS THAT CONTAINED LEAD AND ZINC

SCHEDULE THIS IS OUR PROPOSED SCHEDULE FOR THE REDESIGN OF MINFILE

IT MUST BE REMEMBERED THAT MINERAL DEPOSIT FILES CAN NOT EXIST WITHOUT THE EXPLORATIONIST GOING OUT, ~~WHETHER~~ IT BE LIKE THIS

HELICOPTER

IN THE HOPES THAT EVERYBODY FINDS THIS

GOLD

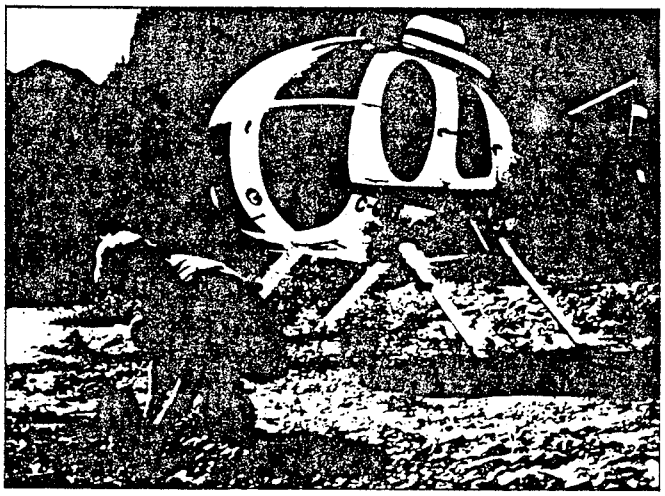
THANK YOU VERY MUCH.

BC geochemical samples entered into data base

Geochemical samples from more than 14,00 sq km of central British Columbia have been analyzed and entered into a data base which is available to industries involved in mining and petro-chemical explorations.

The project began in 1976 and is part of an ongoing nationwide geochemical survey. It's being partially funded by the federal government ($50,000 in 1985) with the BC government putting in $100,000 this year. A geochemical survey of the whole of BC should be completed within the next 20 years or so.

So far, about one-third of the province has been covered on four-miles-per-square-inch map sheets. Collected for this survey were some 1,100 samples of water and stream sediments by The McElhanney Group from an area bounded by Prince George, McBride, Wells and Quesnel.



Some 1,100 samples were taken by The McElhanney Group

Once at the lab, each sample was analyzed to get information on the distribution of elements (15 base metals in the silt, and fluorine, pH and uranium in the water). These results are available to mining companies to seek "path finder" elements such as arsenic, antimony and mercury as background values.

Besides using this data to interpret the economic mineral potential of an area, the BC Ministry of Energy, Mines and Petroleum Resources also uses it to help in evaluating land use because much of the area covered is Crown Land. Results of these surveys are available either on paper or on magnetic tape from the Geochemical Survey of Canada Library, Ottawa.

6.4 MINERAL INVENTORY

N. A. Lyttle

GEOSCAN ACTIVITIES

Indexing and on-line data entry into GEOSCAN, the national, bibliographic database for geological information, have continued throughout 1984 for Nova Scotia Department of Mines and Energy assessment reports, publications, open file reports and open file maps, and geoscience theses and journal literature. As of December 31, 1984, the database contained 7,013 Nova Scotia Department of Mines and Energy records, consisting of: 3,454 assessment reports; 1,520 publications; 978 journal literature references; 535 open file reports; 507 theses; and 20 open file maps. *Report 84-2 Index to Assessment Reports 1983 (with Keyword Index), Report 84-3 Index to Publications and Open File Reports 1981, 1982 and 1983 (with Keyword Index),* and *Report 84-4 Keyword Index to Theses in Report 81-6* were released in July 1984.

GEOSCAN Petroleum Exploration Assessment Reports Project** (M. J. Fraser-MacKinnon)

This project started in May 1984, and as of December 31, 1984, 343 petroleum exploration assessment reports had been indexed, consisting of 92 onshore reports and 251 offshore reports acquired between 1968 and 1984. Of these 343 petroleum exploration assessment reports, 111 are publically available (i.e. nonconfidential), consisting of 20 onshore reports and 91 offshore reports. The 232 confidential reports consist of 72 onshore reports and 160 offshore reports.

GEOSCAN Theses Project*** (D. B. Hopper)

This project, completed in April 1984, has been responsible for the identification and indexing of 507 B.Sc., M.Sc. and Ph.D. theses on various aspects of the geoscience of Nova Scotia, available up to the end of 1980. An author index and an NTS index to these theses were published in *Report 81-6 Index to Publications, Open File Reports and Theses, 1862-1980*. *Report 84-3 Keyword Index to Theses in Report 81-6* was published in July 1984. A publically accessible microfilm file of 430 of these theses is available for consultation in the Halifax Library of the Nova Scotia Department of Mines and Energy, and a Theses Location Map is under preparation.

---

*Canada-Nova Scotia Co-opertive Mineral Program 1981-84 and
Canada-Nova Scotia Mineral Development Agreement
Funded by Province of Nova Scotia and Energy, Mines and Resources Canada
**Canada-Nova Scotia Mineral Development Agreement
Funded by Province of Nova Scotia
***Canada-Nova Scotia Co-operative Mineral Program 1981-84
Funded by Energy, Mines and Resources Canada

GEOSCAN Journal Literature Project (G. Frotten)**

This project started in January 1984, and as of December 31, 1984 1,674 journal literature references on the geoscience of Nova Scotia had been identified. Of these 1,674 references, 978 have been entered into GEOSCAN. Author, NTS and keyword indexes to geoscience journal literature references on Nova Scotia will be published once reference acquisition, indexing and data entry are completed.

GEOSCAN Records Standardization Project (D. Wilkinson)**

Participating agencies have been converting and standardizing their GEOSCAN records to facilitate compatibility and searching of the database as part of the preparations involved in making GEOSCAN publically accessible through commercial on-line database vendors. The conversion and standardization of Nova Scotia GEOSCAN records started in January 1984, and as of December 31, 1984, 3,362 records had been processed. A backlog of 1,113 records remains to be standardized.

GEOSCAN Data Entry Project (J. Newman)**

In order to keep on-line data entry into GEOSCAN up to date with the volume of indexed code sheets generated by the various GEOSCAN projects funded under the Federal-Provincial Agreements, a full-time data entry operator was hired, and started in January 1984. As of December 31, 1984, 361 assessment reports, 134 publications, 30 open file reports, 20 open file maps, 129 theses, 435 journal literature references and 2,973 converted records had been added to the database. The present backlog of documents awaiting data entry is 91 journal literature references, and 856 converted records.

GOLD BIBLIOGRAPHY (J. Gillespie-Wood)

Compilation of information for the gold bibliography, to be entitled *Gold in Nova Scotia: a Bibliography of the Geology, and Exploration and Mining Histories from 1829 to 1984*, is well advanced, and publication is expected early in 1985. The bibliography will contain approximately 1,250 references, covering approximately 265 documented gold districts and occurrences. The bibliography will be organized into three parts: Part I will consist of the following cross reference lists - gold district/occurrence / NTS map / county, NTS map / gold district/occurrence/ county, and county / gold district/occurrence / NTS map; Part II will be an alphabetic author index; and Part III will be an index by gold district, with each gold district subdivided into an author index, an assessment report index and a map and section index.

GOLD PAMPHLET (J. Bates)**

In co-operation with the Public Awareness section, a pamphlet entitled *Gold in Nova Scotia* has been written, and is in the final stages of preparation. The pamphlet is written in a nontechnical manner, intended for the general public and school students. The pamphlet contains information on the history of gold mining in Nova Scotia; the mining and extraction of gold; the occurrence and distribution of gold in Nova Scotia;

the geology and origin of gold deposits in Nova Scotia; and present and future trends in gold exploration. In addition, the pamphlet contains production figures by region; an additional Information/Do-It-Yourself section; a listing of gold festivals and related events; a listing of related continuing education courses on introductory geology and prospecting; and a listing of selected references.

MINERAL OCCURRENCES DATABASE PROJECT* (M. Ponsford)

Information from the metallic mineral occurrences data card file and the industrial mineral occurrences data card file have been computerized to form two mineral occurrences databases. The metallic mineral occurrences database consists of information on 894 mineral occurrences that is recorded in 27 data fields. The industrial mineral occurrences database consists of information on 1,042 mineral occurrences that is recorded in 20 data fields. The databases can be searched on individual data fields or any combination of data fields, and the search results printed out at a computer terminal. In addition, map plots of mineral occurrence locations, at any requested scale, can also be obtained. At present, the mineral occurrences databases are supported at the Maritime Resource Management Service (MRMS) in Amherst, where they can be accessed on a fee-for-service basis.

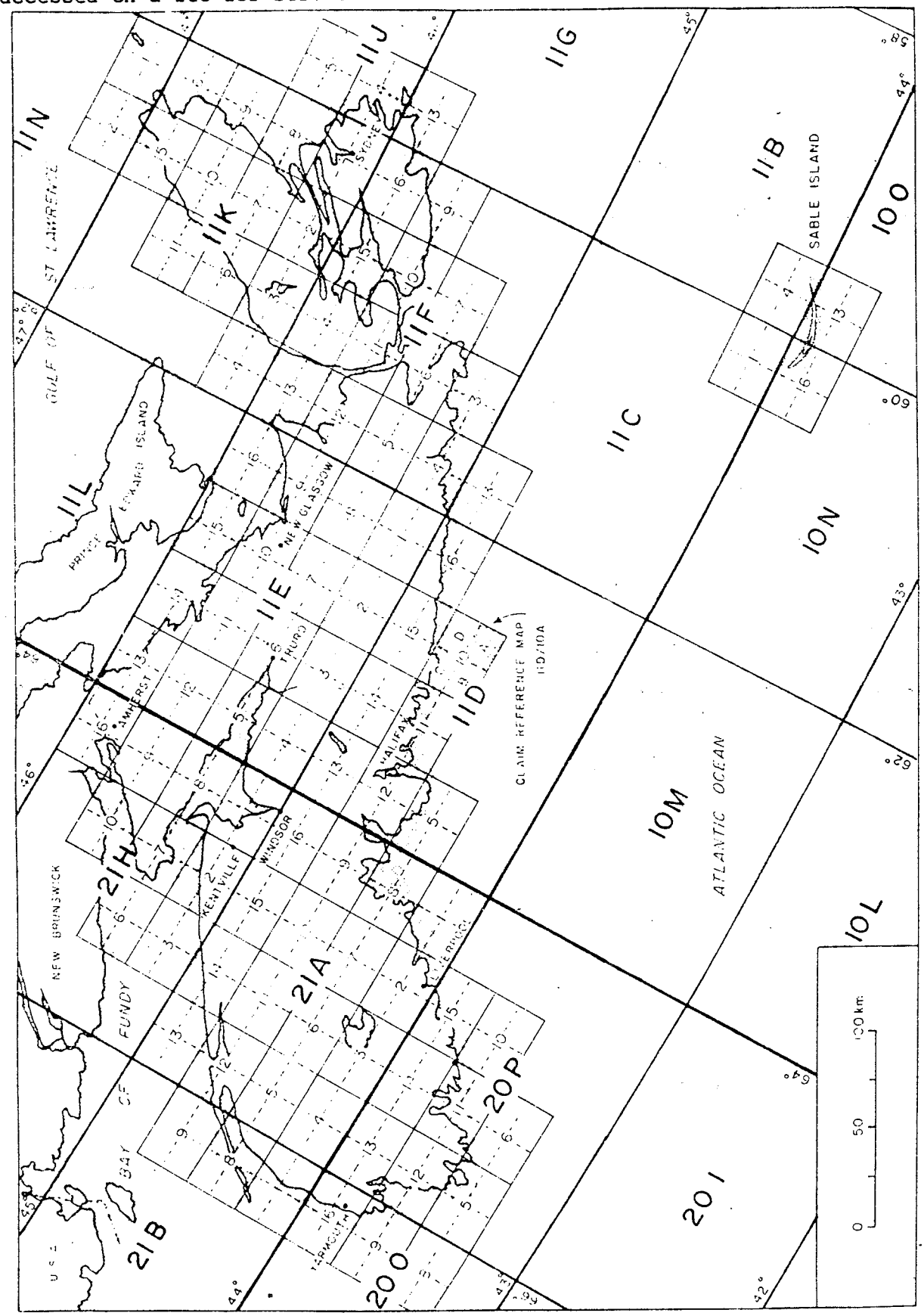
The metallic mineral occurrences database has been updated with new information from documents covering the period 1978, 1979, and 1980. All the mineral occurrences have been plotted on a set of three, 1:250,000 geological base maps, covering Nova Scotia. These maps together with the full 27 field computer listings for each map sheet, were released in December 1984 as open file reports 599, 600 and 601. OFR 599 consists of maps 11D and 11E; OFR 600 consists of maps 11F, 11G, 11J, 11K and 11N; and OFR 601 consists of maps 20O, 20P, 21A, 21B and 21H. Work has begun on updating the industrial mineral occurrences database to 1980, and when complete, a similar set of new open file reports will be released.

DRILLHOLE DATABASE PROJECT* (G. Demont)

As of December 31, 1984 all the assessment reports cited in *Report 81-7 Index to Drillhole and Well Data 1862-1980* had been coded for the information required for the 26 data fields which constitute the original drillhole database. This represents approximately 8,200 drillholes from 1,496 assessment reports. Drillhole data for the following maps sheets have now been entered into the database: 11D, 11E, and 11F. Data for maps 11G, 11J, 11K, 11N, 20O, 20P, 21A, 21B and 21H have still to be entered into the database.

In response to requests for additional drillhole information, six new fields were added to the database during the summer of 1984, namely: drillhole locality, drillhole dip, overburden thickness, Nova Scotia Department of Mines and Energy drillhole record number, exploration company, and drillhole sample location. Data for these additional fields have been coded for all map sheets but entered into the database only for drillholes on map sheet 11D. The data for overburden thickness are available in manual form for all 8,200 drillholes.

The database can be searched on individual data fields or any combination of data fields, and the search results printed out at a computer terminal. In addition, map plots of drillhole locations, at any requested scale, can also be obtained. At present, the drillhole database is supported at the Maritime Resource Management Service, where it can be accessed on a fee-for-service basis.



NOVA SCOTIA DEPARTMENT OF MINES AND ENERGY

AGENCY REPORT

February 1984 to April 1985

Prepared by:

Janet Gillespie-Wood

handout

STAFFING

- **Janet Gillespie-Wood and Norman Lyttle**

  indexing of assessment reports, open file reports, open file maps, publications

  preparation of monthly availability lists

  preparation of annual published indexes

  print formats

- **Gary Frotten**

  on contract until April 1986

  indexing of journal literature on geoscience of Nova Scotia

  indexing assessment-type reports on feasibility and development studies

- **Debbra Wilkinson**

  on contract until April 1986

  conversion plus standarization of all NS records in GEOSCAN

- **Graduate Summer Student**

  16 weeks temporary employment

  indexing of all 1981 to 1985 theses on geoscience of Nova Scotia

- **David Hopper**

  term ended April 1984

  indexing of theses on geoscience of Nova Scotia up to 1980

- **Mary-Jean Fraser MacKinnon**

  term ended mid-March 1985

  indexing of petroleum (onshore and offshore) assessment reports

- **Juanita Newman**

  term ended mid-March 1985

  full time on-line data entry operator

ACTIVITIES

Indexing and on-line data entry into GEOSCAN continued throughout 1984-85 for Nova Scotia assessment reports, publications, open file reports, open file maps, theses and journal literature. As of April 30, 1985, the statistics are:

NOVA SCOTIA Records in GEOSCAN

	Indexed since last meeting	TOTAL
● ASSESSMENT REPORTS - company reports submitted on exploration licenses	497	3539
● JOURNAL LITERATURE - journal articles, abstracts conference proceedings etc on N.S. geology	472	1067
● OPEN FILE MAPS - unpublished maps on N.S. geology - new series started in 1984	20	20
● OPEN FILE REPORTS - unpublished reports on N.S. geology	48	555
● PUBLICATIONS - published departmental publications	171	1556
● THESES - theses on N.S. geology	0	507
TOTAL	1208	7244

● Journal Literature

This project started in January 1984

A total number of 1,739 references have been identified

842 have been fully coded

have been partially coded from GEOREF information

Author, NTS and Keyword indexes to these references will be published once reference acquisition, indexing and data entry are completed.

- **Conversion**

  This project started in January 1984

  Total number of records to be converted is 4,493

  3,648 have been completed so far - this represents all assessment reports and open file reports

  This process not only involves correcting error messages as a result of conversion but also standardizing the record. This involves reviewing the entire record and adding fields such as print authors, map types, illustrations, number of maps etc.

  When this project is completed, NS records in GEOSCAN should be internally consistent.

- **Theses**

  This project was completed in April 1984

  Involved identification and indexing of 507 BSC, MSC and PHD theses on geoscience of Nova Scotia up to the end of 1980.

  430 of these theses are available on microfilm at NSDME.

  Keyword Index to theses was released in 1984 as Report 84-4.

  The theses file will be updated this summer to include 1981 to 1985 in preparation for our 5 year index

- **Petroleum Assessment Reports**

  This project started in May 1984

  398 petroleum assessment reports have been indexed

- **On-line Data Entry**

  A full time operator has been with us since January 1984

  We lost the position mid-March 1985

  Hope to gain the services of a contract person on a part time basis

- **Promotion**

  Norman gave a talk at our Annual Open House and Review of Activities in December 1984

  Norman gave a talk at the Prospectors and Developers Association Convention in Toronto in March 1985

  Norman gave a talk at the Nova Scotia Land Information Workshop 85 in Lawrencetown, N.S. in May 1985

PUBLICATIONS

- **Since last meeting**

Report 83-2	Index to Assessment Reports 1982 (with Keyword Index)
Report 84-2	Index to Assessment Reports 1983 (with Keyword Index)
Report 84-3	Index to Publications and Open File Reports 1981, 1982 and 1983 (with Keyword Index)
Report 84-4	Keyword Index to Theses in Report 81-6
Report 85-2	Index to Assessment Reports 1984 (with Keyword Index)
Report 85-3	Index to Publications, Open File Reports and Open File Maps for 1984 (with Keyword Index)

- **Future Plans**

Journal literature index

5 year index to assessment reports 1981 to 1985

5 year index to publications, open file reports, open file maps and theses 1981 to 1985

Unpublished map index

Publication of full GEOSCAN record showing the data in Keywords, named descriptors, map types etc. ??? i.e. Monitor-type publication, but in fiche only

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 82-2

INDEX TO ASSESSMENT REPORTS 1981

(with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Ron Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

Report 85-3

INDEX TO PUBLICATIONS, OPEN FILE REPORTS, AND OPEN FILE MAPS FOR 1984

(with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Joel R. Matheson, Q.C., Minister
John J. Laffin, P.Eng., FEIC, Deputy Minister

HALIFAX, NOVA SCOTIA

1985

Open File Report 608

Industrial Mineral Occurrences Map and Data Compilation, Western Nova Scotia - Map Sheets 20O, 20P, 21A, 21B, 21H

Mark Ponsford
Garth DeMont
Norman A. Lyttle

April 1985

Open File Report 607

Industrial Mineral Occurrences Map and Data Compilation, Eastern Nova Scotia - Map Sheets 11F, 11G, 11J, 11K, 11N

Mark Ponsford
Garth DeMont
Norman A. Lyttle

April 1985

Open File Report 606

Industrial Mineral Occurrences Map and Data Compilation, Central Nova Scotia - Map Sheets 11D and 11E

Mark Ponsford
Garth DeMont
Norman A. Lyttle

April 1985

Report 84-3

INDEX TO PUBLICATIONS AND OPEN FILE REPORTS 1981, 1982 and 1983 (with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Joel R. Matheson, Q.C., Minister

John J. Laffin, P.Eng., Deputy Minister

Halifax, Nova Scotia
1984

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 81-7

INDEX TO DRILLHOLE AND WELL DATA 1862 - 1980

by

Norman A. Lyttle and Janet Gillespie-Wood

Hon. Ronald Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

HALIFAX, N.S.
1981

Report 83-2

INDEX TO ASSESSMENT REPORTS 1982 (with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Ron Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

Halifax, Nova Scotia
1983

Report 84-2

INDEX TO ASSESSMENT REPORTS 1983 (with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Joel R. Matheson, Q.C., Minister
John J. Laffin, P.Eng., Deputy Minister

Halifax, Nova Scotia
1984

Report 85-2

INDEX TO ASSESSMENT REPORTS 1984

(with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Joel R. Matheson, Q.C., Minister
John J. Laffin, P.Eng., FEIC, Deputy Minister

HALIFAX, NOVA SCOTIA
1985

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 81-6

INDEX TO PUBLICATIONS, OPEN FILE REPORTS AND THESES 1862 - 1980

by

Norman A. Lyttle and Janet Gillespie-Wood

Hon. Ronald Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

HALIFAX, N.S.
1981

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 81-4

INDEX TO ASSESSMENT REPORTS 1864 - 1980

by

Norman A. Lyttle and Janet Gillespie-Wood

Hon. Ronald Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

HALIFAX, N.S.
1981

Report 85-2

INDEX TO ASSESSMENT REPORTS 1984

(with Keyword Index)

by

Norman A. Lyttle and Janet Gillespie-Wood

Honourable Joel R. Matheson, Q.C., Minister
John J. Laffin, P.Eng., FEIC, Deputy Minister

HALIFAX, NOVA SCOTIA
1985

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 81-6

INDEX TO PUBLICATIONS, OPEN FILE REPORTS AND THESES 1862 - 1980

by

Norman A. Lyttle and Janet Gillespie-Wood

Hon. Ronald Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

HALIFAX, N.S.
1981

PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY

Report 81-4

INDEX TO ASSESSMENT REPORTS 1864 - 1980

by

Norman A. Lyttle and Janet Gillespie-Wood

Hon. Ronald Barkhouse, Minister
John J. Laffin, P. Eng., Deputy Minister

HALIFAX, N.S.
1981

MINERAL OCCURRENCES DATA BASES

- 1980-1984 MOD CARDS UPDATED TO 1980 AND
- MINERAL OCCURRENCES COMPUTER DATA BASES CREATED
- CANADA-NOVA SCOTIA COOPERATIVE MINERAL PROGRAM '81-84
- CANADA-NOVA SCOTIA MINERAL DEVELOPMENT AGREEMENT '84-89
- KAREN WHITE-SMITH; MARK PONSFORD; GARTH DEMONT

- USING INFORMATION FROM THE MOD CARDS
- METALLIC MINERAL OCCURRENCES DATA BASE
  - 27 DATA FIELDS; 894 OCCURRENCES
- INDUSTRIAL MINERAL OCCURRENCES DATA BASE
  - 20 DATA FIELDS; 1,052 OCCURRENCES
- DATA FIELDS COLLECTIVELY PROVIDE INFORMATION ON - NAME, LOCATION, MINERALIZATION AND GEOLOGICAL CHARACTERISTICS

- DATA BASES SUPPORTED ON THE "GEO BASED" SYSTEM AT MARITIME RESOURCE MANAGEMENT SERVICE, AMHERST, N.S.
- DEC PDP11/73 AND PDP11/23 MINICOMPUTERS

- DATA BASES CAN BE SEARCHED ON ANY ONE, OR COMBINATION, OF DATA FIELDS
- REPORTS OUTPUT TO LINE PRINTER OR MAGNETIC TAPE
- MAP PLOTS AT VARIOUS SCALES OF MINERAL LOCATIONS USING A ZETA DRUM PLOTTER
- FEE - FOR - SERVICE BASIS

- RECENTLY RELEASED UPDATED MAPS AND DATA TABULATIONS
- FROM METALLIC MINERAL OCCURRENCES DATA BASE
- OFR 599 - CENTRAL NOVA SCOTIA - 11D, 11E
- OFR 600 - EASTERN NOVA SCOTIA - 11F, G, J, K, N
- OFR 601 - WESTERN NOVA SCOTIA - 20O, P, 21A, B, H
- $3.00 EACH

- FOR INDUSTRIAL MINERAL OCCURRENCES DATA BASE
- 3 SIMILAR OFRS - 606, 607 AND 608
- IN FINAL PREPARATION; RELEASED SOON

NSDME MINERAL INVENTORY SYSTEMS

- MINERAL OCCURRENCES DATA CARDS
- MINERAL OCCURRENCES DATA BASES
- DRILLHOLES DATA BASE
- BIBLIOGRAPHIC DATA BASE

MINERAL OCCURRENCES DATA CARDS

- DEVELOPED BY DIANE GREGORY, CO-WORKERS, 1975-79
- DREE AGREEMENT BETWEEN CANADA AND NOVA SCOTIA
- MANUAL, CARD FILE SYSTEM
- EACH MINERAL OCCURRENCE REPRESENTED BY 1 MOD CARD

- 1 SET OF CARDS FOR METALLIC MINERAL OCCURRENCES
- 1 SET OF CARDS FOR INDUSTRIAL MINERAL OCCURRENCES
- CARDS FILED ON THE BASIS OF 1:50 000 NTS MAP SHEETS
  E.G. 11D/01 ... 11D/16; 11E/01 ... 11E/16 ETC.
- MINERAL OCCURRENCES NUMBERED AND FILED SEQUENTIALLY
  E.G. D01-01, D01-02, D01-03 ETC.

- INFORMATION FROM NSDME AND GSC DOCUMENTS
- ORIGINAL COMPILATION UP TO 1978
- OFR 431 - INDUSTRIAL MINERAL OCCURRENCES MAPS, 1980
- OFR 454 - METALLIC MINERAL OCCURRENCES MAPS, 1980
- GEOLOGICAL MAP OF NOVA SCOTIA, METALLIC MINERAL EDITION, 1979

DRILLHOLE DATA BASE

- INFORMATION ON DRILLHOLES IN NOVA SCOTIA
- MOSTLY ON-LAND MINERAL EXPLORATION HOLES
- CANADA-NOVA SCOTIA COOPERATIVE MINERAL PROGRAM '81-84
- CANADA-NOVA SCOTIA MINERAL DEVELOPMENT AGREEMENT '84-89
- JENNIFER BATES; GARTH DEMONT

- DH DATA BASE VERY SIMILAR TO MINERAL DATA BASES
- SUPPORTED ON "GEO BASED" SYSTEM AT MRMS
- 31 DATA FIELDS
- SAME SEARCH, REPORT GENERATION AND MAP PLOTTING FACILITIES
- MINERALIZATION IN DRILLHOLES

- DATA BASE CONTAINS 5,500 DHS
- 2,800 DHS AWAITING DATA ENTRY
- FROM 1,500 ASSESSMENT REPORTS IN REPORT 81-7
- UP TO 1980

BIBLIOGRAPHIC DATA BASE

- KEYWORD INDEXES -
- REPORT 82-3 KEYWORD INDEX TO PUBLICATIONS IN REPORT 81-6
- REPORT 82-4 KEYWORD INDEX TO OPEN FILE REPORTS IN REPORT 81-6
- REPORT 84-4 KEYWORD INDEX TO THESES IN REPORT 81-6
- REPORT 82-5 KEYWORD INDEX TO GSC DOCUMENTS ON NOVA SCOTIA TO 1980

- 7,140 NSDME RECORDS IN GEOSCAN -

• ASSESSMENT REPORTS	-	3,472
• PUBLICATIONS	-	1,536
• JOURNAL REFERENCES	-	1,070
• OPEN FILE REPORTS	-	535
• THESES	-	507
• OPEN FILE MAPS	-	20

- ASSESSMENT REPORTS INDEXES -
- REPORT 81-4 INDEX TO ASSESSMENT REPORTS 1864-1980
- REPORT 81-5 KEYWORD INDEX TO REPORT 81-4
- REPORT 82-2 INDEX TO ASSESSMENT REPORTS 1981
- REPORT 83-2 INDEX TO ASSESSMENT REPORTS 1982
- REPORT 84-2 INDEX TO ASSESSMENT REPORTS 1983
- REPORT 85-2 INDEX TO ASSESSMENT REPORTS 1984

- PUBLICATIONS AND OTHER INDEXES -
- REPORT 81-6 INDEX TO PUBLICATIONS, OPEN FILE REPORTS AND THESES 1862-1980
- REPORT 84-3 INDEX TO PUBLICATIONS AND OPEN FILE REPORTS FOR 1981, 1982 AND 1983
- REPORT 85-3 INDEX TO PUBLICATIONS, OPEN FILE REPORTS AND OPEN FILE MAPS FOR 1984
- REPORT 81-7 INDEX TO DRILLHOLE AND WELL DATA 1862-1980

- GEOSCAN - THE NATIONAL DATA BASE
- BIBLIOGRAPHIC, GEOLOGICAL INFORMATION
- MANAGED BY THE NATIONAL GEOSCAN CENTRE
- GEOLOGICAL INFORMATION DIVISION, GSC
- 11 PARTICIPATING FEDERAL AND PROVINCIAL AGENCIES, PLUS CSPG

- GEOSCAN SUPPORTED ON "MINISIS" SYSTEM
- HP 3000 MINICOMPUTER
- LEASED BY EMR; OPERATED BY SYSTEMHOUSE
- ON-LINE DATA ENTRY, SEARCH AND RETRIEVAL
- ACCESS THROUGH AGENCIES OR NGC
- PUBLIC ACCESS THROUGH CANADIAN VENDOR OF ON-LINE DATA BASES PRESENTLY UNDER INVESTIGATION

- MUCH INFORMATION ACQUIRED, CODED, ENTERED UNDER -
- CANADA-NOVA SCOTIA COOPERATIVE MINERAL PROGRAM '81-84
- CANADA-NOVA SCOTIA MINERAL DEVELOPMENT AGREEMENT '84-89
- JANET GILLESPIE-WOOD; DAVID HOPPER; GARY FROTTEN; MARY-JEAN FRASER-MACKINNON, DEBBRA WILKINSON; JUANITA NEWMAN

- CONTROL OF GEOSCIENCE INFORMATION ON NOVA SCOTIA
- ALLOWS PUBLICATION OF INDEXES TO INFORMATION
- INDEXES PUBLISHED - NTS, DOCUMENT TYPE, AUTHOR, SUBJECT AND KEYWORD INDEXES
- ANSWERS - WHAT, WHERE, WHEN, BY WHOM

6.5 NEWFOUNDLAND MINERAL OCCURRENCE DATA SYSTEM

BY

C. F. O'DRISCOLL

MINERAL DEPOSITS SECTION

DEPARTMENT OF MINES AND ENERGY

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

A Paper Presented to the

WORKSHOP ON MINERAL INVENTORY DATA FILES

Toronto, Ontario

March 14, 1985

INTRODUCTION

The Newfoundland Department of Mines and Energy initiated a Mineral Inventory project in 1971 in order to provide a readily accessible file in index card form which summarized all the available information on known mineral occurrences in the province (Hsu, 1974). These initial compilations were carried out until 1974 and were then discontinued. About 2500 occurrences had been identified of which 1200 had been documented.

In 1976, a folio of mineral occurrences maps, plotted on black and white geological bases at a scale of 1:250,000 were published. These were accompanied by mineral occurrence tables in booklet form (Douglas, 1976a and b) which contained very brief descriptions of the mineral occurrences compiled from the Mineral Inventory File. The data was tabulated according to the following categories: name, commodity, NTS area, minerals present, description, host rocks, work done, production, reserves and remarks. In addition, summary maps for insular Newfoundland and for Labrador were prepared, which showed the mineral occurrences and the NTS grid, at a scale of 1:1,000,000. The occurrences were numbered such that the tables could be used as references for the summary maps as well as the larger scale maps.

In 1978, the present Mineral Occurrence Data System was devised after research into mineral inventory files across Canada and the U.S. The proposed system was originally described by McArthur (1978) and Missan et al (1979) and part of this paper is taken from their report. The system is designed to offer an efficient information service on

all mineral occurrences in the province. It is a two-part project comprising a manual Mineral Inventory File and a computerized Mineral Index.

MANUAL MINERAL INVENTORY FILE

The manual Mineral Inventory File is part of the National Mineral Inventory and was originally proposed to continue and update the card system of Hsu (1974) and the mineral occurrence maps and tables of Douglas (1976a and b).

In 1978, a pilot project was carried out in the Stephenville (12B) map area. By April, 1979, the system was fully operational with two Mineral Inventory Geologists (one responsible for insular Newfoundland and one for Labrador) and one Project Geologist. The number of Mineral Inventory Geologists increased to a maximum of four during 1981.

The Mineral Inventory File consists of mineral occurrence descriptions which summarize all the available data on known mineral occurrences in the province. A description may be prepared for any type of occurrence from an indication to a producing mine. In preparing a description the compiler researches all reports and publications which contain information on a particular occurrence. The location is then plotted on a 1:50,000 topographic map and the information is condensed under the following headings: name, product, owner/operator, land tenure, location and access, description, history of exploration and development, production and/or reserves, status, type of deposit, mineralogical composition, nature of mineralization

and genesis, host rocks, structure of deposit, structural features and tectonic setting, metal/mineral content, geophysical expression, geochemical expression, physiographic setting, remarks and references.

All mineral occurrences for the island of Newfoundland have been compiled except NTS area 11P (Figure 1). Areas 1L and 1M are now being input and will be available within the next few months. Areas which have been completed in Labrador are: 13I, 13J, 13K, 13N, 13O, 14C, 23I, 23J and 23O (see Figure 2). These map areas are located in the Central Mineral Belt and the Labrador Trough which contain the majority of known mineral occurrences in Labrador. Updates are made periodically as land tenure changes and new mineral occurrences are discovered.

At present, the file consists of approximately 3000 mineral occurrence descriptions, each description containing from 3 to 10 pages. The whole file contains approximately 15,000 pages.

The file is presently being microfiched with the topographic location maps and as they are completed, microfiche duplicates will be available upon request. Each duplicate costs 50 cents and contains several descriptions depending on their length. Areas which have been microfiched are: 2C, 2D, 2E, 2F, 2L, 2M, 11O, 12B, 12I, 12P, 13K, 13N and 14C.

1:250,000 mineral occurrence maps with updated geological bases are being prepared for printing. So far, twelve maps have been printed and are available upon request at a cost of $3.00 each. These are 2C, 2D, 2E, 2F, 2M, 11O, 12B, 12G, 12P, 13K, 13N and 14C. In addition, a 1:100,000 map of parts of 13J and O and a 1:50,000 map of 13K/5 are printed and available. These maps contain locations of all

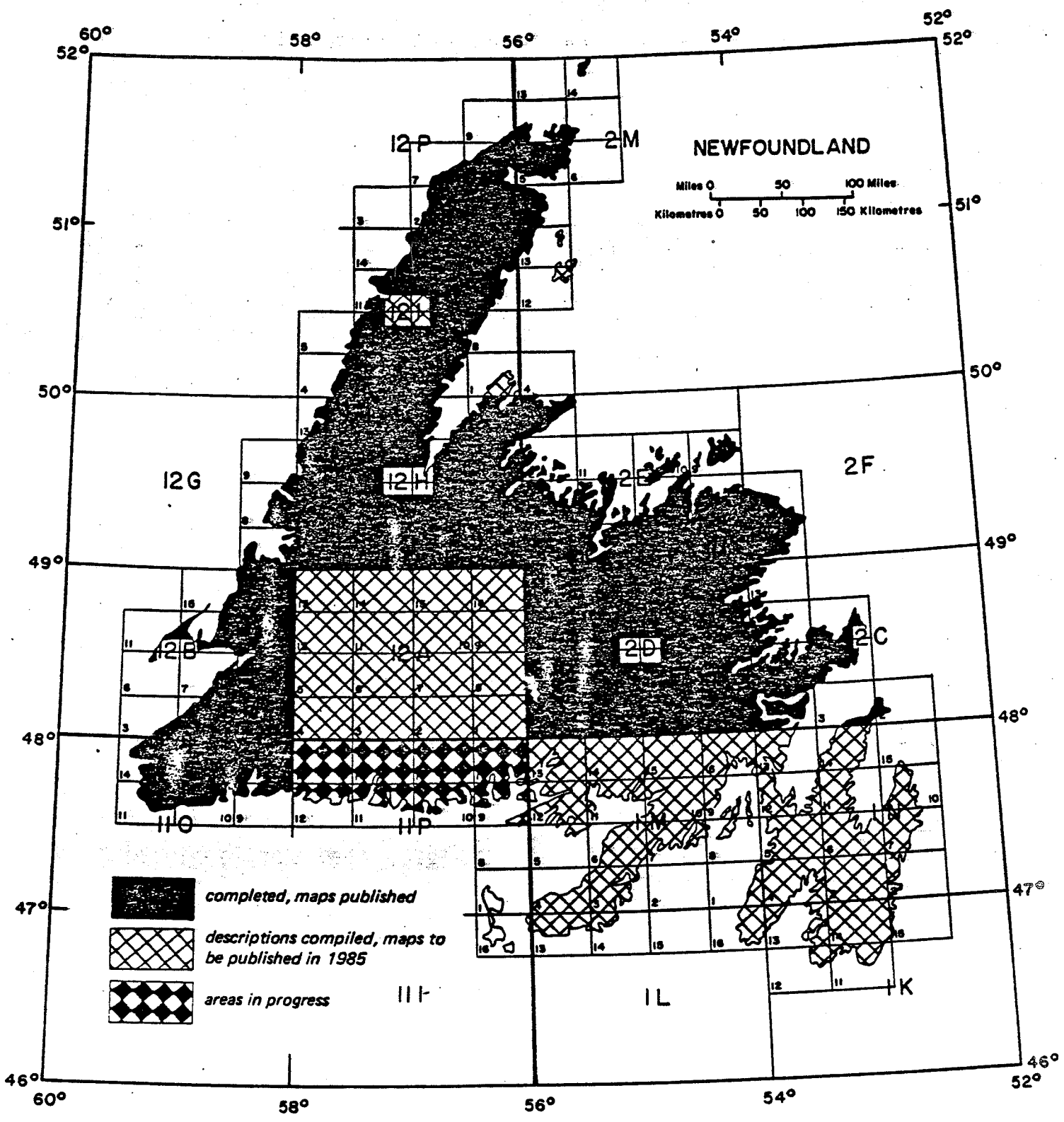


FIGURE 1: *Index map for Mineral Occurrence Data System project, insular Newfoundland.*

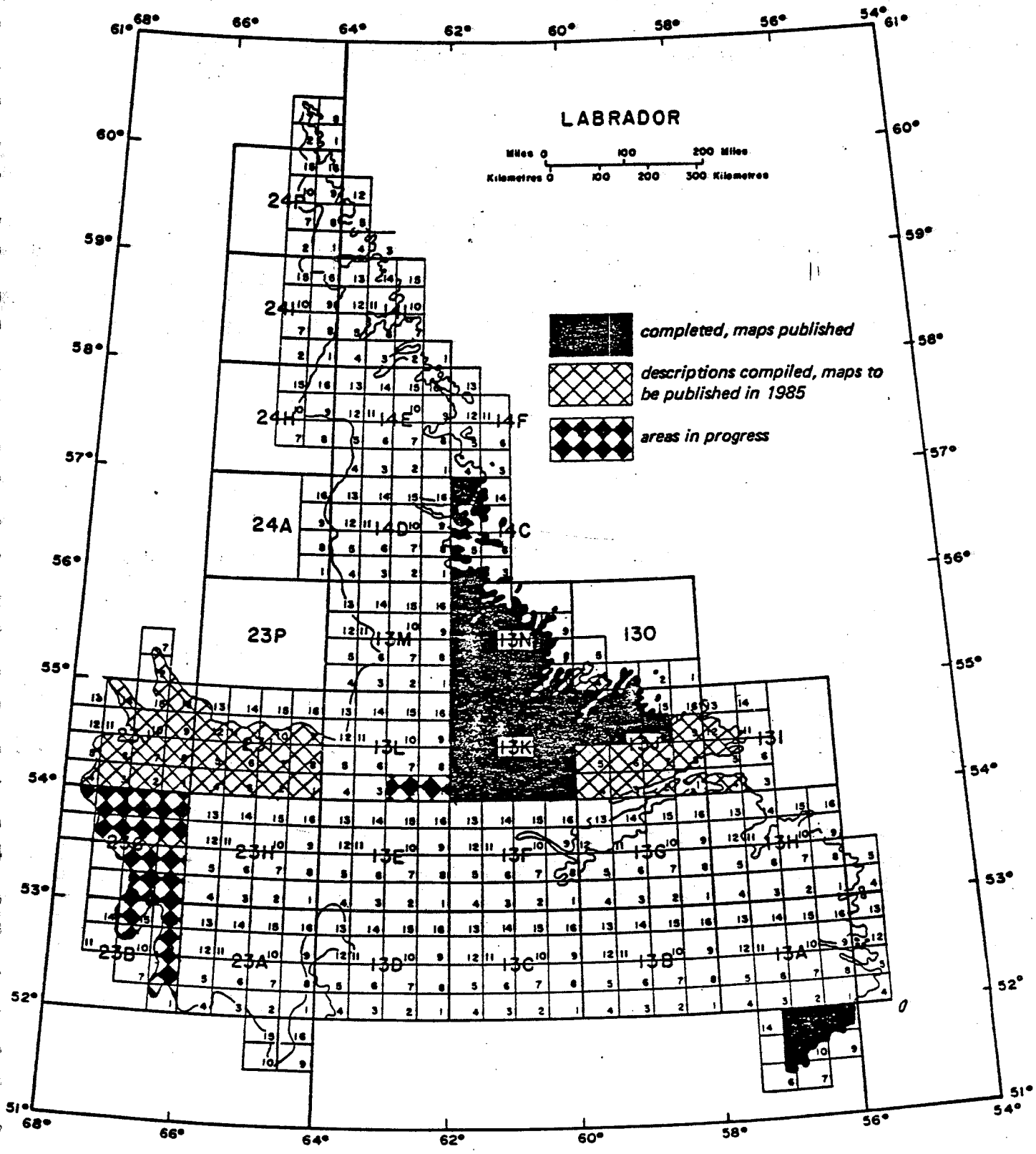


FIGURE 2: *Index map for Mineral Occurrence Data System project, Labrador.*

mineral occurrences in the area together with a listing of these occurrences which include the name, status and minerals present. Published maps for most of Newfoundland and some parts of Labrador will be available within the next year.

COMPUTERIZED MINERAL INDEX

The computerized Mineral Index contains coded and free format data selectively extracted from the Mineral Inventory File. The purpose of the index is to efficiently organize important data on the occurrences so that a wide variety of retrievals can be made, taking advantage of the powerful sorting capabilities offered by computerization. The general categories of information that are considered appropriate for computerization are: identificiation, name and ownership, location, description of deposit, geological setting, exploration and development, and bibliography. An example of a coding form is shown in Figure 3.

To manage the computer file and to help make retrievals, a computer program called GRASP (Geological Retrieval And Synopsis Program) has been installed on an AMDAHL 5860 computer at Newfoundland and Labrador Computer Services Limited. GRASP was developed at the United States Geological Survey (Bowen and Botbol, 1975) specifically as a geological data storage and retrieval system to be used primarily by geologists. It is a very easy system to use and highly interactive.

The file can be accessed through three high-speed terminals at the Department of Mines and Energy offices in St. John's. Areas which

MODS
Mineral Occurrence Data System

Mineral Development Division
Newfoundland Department of Mines & Energy

EPOS E
PRIMARY SOURCE
CODER DATE
CHECKED BY DATE
ORIGINAL ( ) UPDATE ( )

RECORD ID (1 6)

RECORD IDENTIFICATION

CARD # (8 9) | SPLIT (11) | NMI ACCESSION NUMBER (13 26)

NAME AND OWNERSHIP

DEPOSIT NAME (11 41) | ALTERNATE NAME (41 71) | OWNER AND/OR OPERATOR (71 101) | OW/OP IND (101) | TENURE (102 103)

LOCATION

PROV (11) | DIST (15) | NTS (17) | LAT (23) | LONG (29) | UTM ZONE (35) | EASTING (37) | NORTHING (43) | ENTITY CODED (50) | MAP SCALE (51 52) | ENTITY COMMENT (81)

DESCRIPTION OF DEPOSIT

DEPOSIT TYPE (11) | COMMODITY NAME (14) | STATUS (34) | STATUS D (35) | PRODUCT (36) | COMMODITIES AND THEIR STATUS (37 96)

DEPOSIT CHARACTER (11 110)

DEPOSIT CHARACTER (11 110)

DEPOSIT CHARACTER (11 110)

GEOLOGICAL SETTING

GEOL PROV (11) | TECTONIC BELT (15) | STRATIGRAPHIC UNIT (17 47) | GEOLOGICAL AGE (47 56) | AGE CODE (56 59) | HOST ROCKS (59 106)

HOST ROCKS (11 41) | REMARKS (41 110)

EXPLORATION AND DEVELOPMENT

GEOL WK (11) | GEOPH WK (12) | GEOCH WK (13) | DDH (14) | TRENCH (18) | ADIT (19) | SHAFT (20) | WORKINGS (21) | SIZE (23) | PRODUCTION AND RESERVES (24 80)

PRODUCTION AND RESERVES (11 100)

Figure 3

BIBLIOGRAPHY

CARD # (12) MAP REFERENCE (8 9 11 ... 41) IN REFERENCE ( )

REFERENCE #1 AUTHOR, INITIALS, YEAR, TITLE, FILE NUMBER

(13) (8 9 11 ... 90)

(14) (8 9 11 ... 90)

(15) (8 9 11 ... 90)

REFERENCE #2 AUTHOR, INITIALS, YEAR, TITLE, FILE NUMBER

(16) (8 9 11 ... 90)

(17) (8 9 11 ... 90)

(18) (8 9 11 ... 90)

REFERENCE #3 AUTHOR, INITIALS, YEAR, TITLE, FILE NUMBER

(19) (8 9 11 ... 90)

(20) (8 9 11 ... 90)

(21) (8 9 11 ... 90)

REFERENCE #4 AUTHOR, INITIALS, YEAR, TITLE, FILE NUMBER

(22) (8 9 11 ... 90)

(23) (8 9 11 ... 90)

(24) (8 9 11 ... 90)

REFERENCE #5 AUTHOR, INITIALS, YEAR, TITLE, FILE NUMBER

(25) (8 9 11 ... 90)

(26) (8 9 11 ... 90)

(27) (8 9 11 ... 90) MORE REFERENCES ( ) 91

CODING INFORMATION

(28) (8 9 11 CODED BY 14 CODE DATE yr mo 18 UPDATED BY 21 UPDATE yr mo 25 CONFIDENTIAL 26 REVIEW DATE yr mo day 32 RELEASE DATE yr mo day 37)

UPDATE REMARKS

(29) (8 9 11 ... 100)

Figure 3 Continued

have been keypunched, edited and entered in the GRASP system are: 2E, 2L, 2M, 12B, 12G, 12H, 12I, 12P, 13I, 13J, 13K, 13N, 13O and 14C.

USES OF MINERAL OCCURRENCE DATA SYSTEM

Prior to 1978, information on the geology, history of exploration, nature of mineralization and other important data on mineral properties could only be obtained by long research through numerous files. With the Mineral Occurrence Data System in place, preliminary research can now be done quickly and efficiently.

The system was built to serve four major user communities. These are: a) the exploration geologists and prospectors engaged in the search for mineral deposits in the province; b) the geological staff of the Department of Mines and Energy engaged in mapping and evaluating the mineral potential of the province; c) the Department of Energy, Mines and Resources which is building Canada-wide mineral occurrence files such as the National Mineral Inventory, CANMINDEX and MINSYS; and d) academic and research geologists and students of economic geology.

The manual Mineral Inventory File is used as a quick reference to specific deposits. Exploration company personnel frequently request descriptions of a particular mineral showing or prospect when they want a good summary or a list of references to carry out further research. This is particularly true when companies are new to the province or move into new areas. This preliminary research is generally done in our offices. However, since a large part of the

file has been microfiched, it is available to all companies at a reasonable cost.

The Mineral Inventory File is used daily by government geologists in land-use planning. Advice is given to various departments of government in establishing wilderness areas, hydro developments, provincial and national parks and any other developments which may conflict with future mineral exploration and development. In addition, municipal councils and the Department of Municipal Affairs are advised of the location, extent, and nature of mineral deposits in specific areas so that new housing and commercial developments, municipal parks, water resevoirs and sewerage disposal systems can be located in areas of low mineral potential, if possible.

Copies of the file are made available to the various agencies of the federal government such as the Mineral Policy Sector and the Geological Survey of Canada. These are then adapted to the National Mineral Inventory, MINSYS and CANMINDEX.

The file is available to anyone who is researching mineral deposits of the province. It is useful to students who are writing papers on specific mineral deposits as well as company and government personnel who are writing proposals for future work or preparing information brochures about particular areas.

By the use of computers, the retrieval capability from the computerized Mineral Index is optimized and complex retrievals can be made which would be virtually impossible if a manual system were used. Some examples of the types of possible retrievals are:

1. Listing all minerals occurrences in a geographical area.

2. Listing a combination of commodities which occur in a certain environment, a particular geological province or a tectonic belt; for example, all occurrences with mineral assemblages similar to those found at the Chetwynd prospect.

3. Listing factors such as the stage of exploration, production status, reserves etc. for all major commodities of a certain area.

4. Listing all references pertaining to a particular occurrence or combination of occurrences.

5. Identification of mineral deposits with certain characteristics of mineralogy or lithology, for example, Mississippi Valley type, Kuroko type, or epithermal precious metals.

These are but a few of the types of retrievals which can be made. Although the computerized file is not yet complete, it can be accessed through remote terminals at the Department of Mines and Energy offices in St. John's.

REFERENCES

Bowen, R. W. and Botbol, J. M., 1975: The geological retrieval and synopsis program (GRASP). United States Geological Survey, Professional Paper 966, 87 pages.

Douglas, C., 1976a: Mineral occurrence tables, Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Division, Open File Nfld. 888.

1976b: Mineral occurrence tables, Labrador. Newfoundland Department of Mines and Energy, Mineral Development Division, Open File Lab. 326.

Hsu, E., 1974: Mineral Inventory. In Report of Activities, 1973. Edited by W. R. Smyth. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 74-1, pages 6-8.

McArthur, J. G., 1978: Mineral evaluation section activities. In Report of Activities for 1977. Edited by R. V. Gibbons. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 78-1, pages 169-170.

Missan, H. S., McArthur, J. G. and Andrews, K., 1979: MODS - Mineral occurrence data system. In Report of Activities for 1978. Edited by R. V. Gibbons. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 79-1, pages 182-196.

MINERAL OCCURRENCE DATA SYSTEM

by

C.F O'Driscoll
Mineral Deposits Section

INTRODUCTION

The Mineral Occurrence Data System is designed to offer an efficient information service on all mineral occurrences in Newfoundland and Labrador. It is a two-part project comprising a Mineral Inventory File and a computerized Mineral Index.

MINERAL INVENTORY FILE

The Mineral Inventory File consists of mineral occurrence descriptions which summarize all the available information on known mineral occurrences in the province. A description may be prepared for any type of occurrence from an indication to a producing mine. It contains information under the following headings: name, product, owner/operator, land tenure, location and access, description, history of exploration and development, production and/or reserves, status, type of deposit, mineralogical composition, nature of mineralization and genesis, host rocks, structure of deposit, structural features and tectonic setting, metal/mineral content, geophysical expression, geochemical expression, physiographic setting, remarks and references.

Information on all mineral occurrences for the island of Newfoundland has been compiled except area 11P (see Figure 1). Areas 1L and 1M are now being input and will be available within the next few months. Areas which have been completed in Labrador are: 13I, 13J, 13K, 13N, 13O, 14C, 23I, 23J and 23O (see Figure 2). These map areas are located in the Central Mineral Belt and the Labrador Trough.

At present, the file consists of approximately 3000 mineral occurrence descriptions and each description contains at least 3 pages and in some cases up to 10 pages. The whole file contains approximately 15,000 pages. These descriptions are available at the cost of 15 cents per sheet.

The file is presently being microfiched with topographic location maps and as they are completed, copies will be available upon request. Areas which have been microfiched are 2C, 2E, 2F, 12B, 12H, 12P, 13K, 13N and 14C. It is hoped to have the complete file microfiched over the next year.

1:250,000 mineral occurrence maps with updated geological bases are being prepared for printing. So far, twelve maps have been printed and are available upon request at a cost of $3.00 each. These are 2C, 2D, 2E, 2F, 2M, 11O, 12B, 12G, 12P, 13K, 13N and 14C. In addition, a 1:100,000 map of parts of 13J and O and a 1:50,000 map of 13K/5 are printed and available. These maps contain locations of all mineral occurrences in the area together with a listing of these occurrences which includes the name, status and minerals present. Published maps for most of Newfoundland and some parts of Labrador will be available within the next year.

COMPUTERIZED MINERAL INDEX

The computerized Mineral Index contains information selectively extracted from the Mineral Inventory File. When complete, it will be possible to make a wide variety of complex retrievals which would be virtually impossible if a manual system were used. The computerized file is not presently available for reproduction but can be accessed at the Department of Mines and Energy offices in St. John's.

CURRENT RESEARCH
Mineral Development Division
Department of Mines and Energy
Government of Newfoundland and Labrador
Report 85-1

St. John's, Newfoundland
March, 1985

MINERAL ASSESSMENT REPORT LIBRARY MICROFICHE PROJECT

by

N.L. Mercer
Publications and Information Section
Mineral Development Division
Department of Mines and Energy
Government of Newfoundland and Labrador

The Mineral Development Division maintains a geological and mineral resource assessment file system which is referred to as the "Mineral Assessment Report Library". This library presently consists of approximately 9,000 geological and geochemical reports, maps, journal articles and mineral assessment files, making them the largest and most comprehensive single collection of geoscience documents about Newfoundland and Labrador.

As a result of the high level of mineral exploration activity experienced during the late 1970's and early 1980's throughout the province, the amount of new data submitted increased substantially. New information is now available on many of the old and also numerous new mineral occurrences in the province. Much more is now known about the geology and mineral potential of various regions both on the island and in Labrador.

The Mineral Development Division has also conducted a large number of field projects over the past few years. This has resulted in the publication of many new geological reports, maps and open files as well as the results of numerous geochemical surveys and surficial and agg egate resource studies.

Mining and exploration companies, prospectors, geotechnical and consultant firms, government agencies, universities, libraries and the general public are continually making use of the geofiles and requesting information from them. Requests have increased substantially in the past few years.

During the past five years the Publications and Information Section has been putting all of the good quality mineral assessment reports on microfiche. This provides a much more efficient system of maintaining the geofiles. Requests for information are processed more rapidly and easily, with relatively inexpensive charges for microfiche.

The microfiche project involves daily filming of batches of reports. The reports are cross-checked before filming for quality, content and reproducibility. Two microfiche originals are made and cataloged for each file. Filing follows the standards of the National Topographic System. Duplicates can be copied from the original fiche upon demand. One set of fiche originals is stored offsite at the Torbay Core Library for security and protection from fire.

Microfiche sets of mineral assessment reports covering all 1:250,000 N.T.S. blocks in insular Newfoundland are available along with microfiche sets for many of the Newfoundland General Series reports. Several releases have also been made for microfiche sets of mineral assessment reports from a number of the 1:250,000 N.T.S. blocks in Labrador.

Work on the Labrador mineral assessment reports is continuing and we are expecting to make several more releases of duplicate sets of microfiche by Christmas. Labrador has been the focus of our attention this year and we are expecting to complete this phase of the project in 1985.

The total cost of mineral assessment reports which are available as microfiche duplicates is $1,757.00

During 1984, we also continued placing the mineral occurrence reports on microfiche and making them available. Presently, mineral occurrence reports for N.T.S. 2E, 12B and 12P in Newfoundland, and N.T.S. 13K, 13N and 14C in Labrador are available. Further releases will be made as staff in the Mineral Deposits Section complete new N.T.S. areas.

For information, please contact Norman Mercer (709) 737-3159. We look forward to your comments and suggestions.

ACKNOWLEDGEMENTS

Doreen Mahon is thanked for her excellent work on the microfiche project this past year.

The Department of Mines and Energy also acknowledges the continued participation and cooperation of Ches Hapgood and staff of the Micrographics Section, Newfoundland Department of Public Works and Services, especially in filming and duplicating the geofiles.

6.6

THE NORTHERN CORDILLERA MINERAL INVENTORY

By Robert J. Cathro

Archer, Cathro & Associates (1981) Limited

A Paper presented to the

WORKSHOP on MINERAL INVENTORY DATA FILES

Toronto, Ontario

March 14, 1985

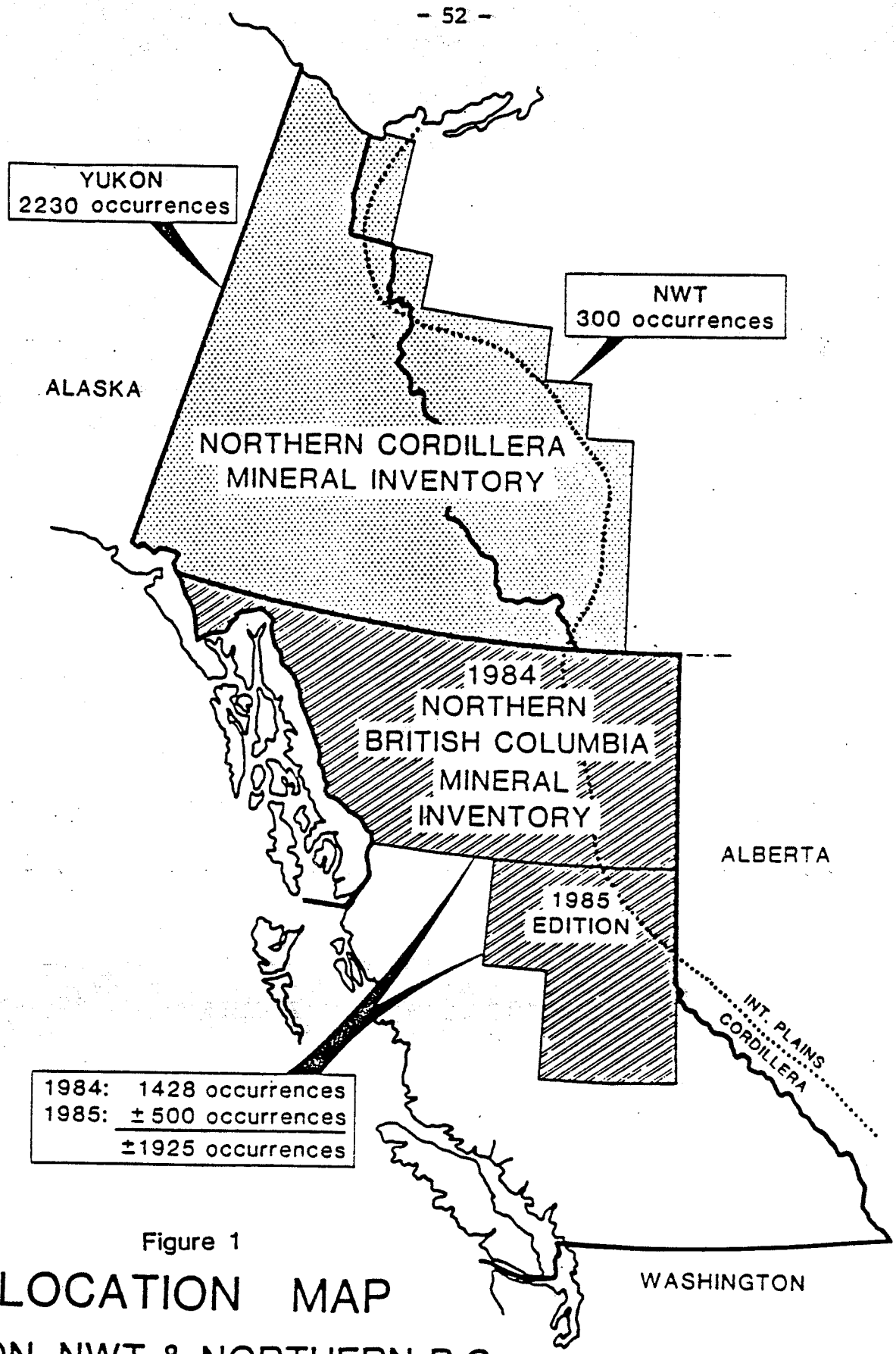


Figure 1

LOCATION MAP

YUKON, NWT & NORTHERN B.C. MINERAL INVENTORIES

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

INTRODUCTION

A national review of the purpose and content of Mineral Inventory Data Files (MID Files) is certainly timely and appropriate as we enter a new era in data storage and retrieval. It occurs to many of us that existing files in Canada were created on an ad hoc basis to serve many purposes and that they do not comprise a coherent and logical system. In addition to the obvious danger that these files will become increasingly incompatible, there is the larger concern that emphasis on processing data before improving the content may well result in a wasted investment (the well known concept of garbage in/garbage out).

We are in a unique position to address this workshop because of our experience in producing MID Files on a commercial basis. In fact, I may be the only person here today who has an appreciation of how much it costs to produce an accurate and comprehensive exploration file. With 25 years of experience in mineral exploration to go with 15 years of MID File compilation in the northern half of the Cordillera, my firm is an authority on what explorers want from these files and are prepared to pay.

ARCHER, CATHRO MID FILES

We presently produce two separate MID Files:

Northern Cordillera Mineral Inventory (NCMI) - Yukon and Mackenzie Mountains, N.W.T. (Yukon Territory is slightly larger than the combined area of the four Atlantic Provinces, while the total area covered by the NCMI is larger than each of the three Prairie Provinces).

Our MID File on the Northern Cordillera grew out of the occurrence data we began accumulating in 1966 when we started to specialize in exploration of that region. At that time, the closest thing to a MID File for Yukon was a map contained in GSC Paper 67-36 showing the locations of 183 occurrences at a scale of 1:2,000,000. We soon realized that our files were far larger than that and, when the industry went into a mild recession in 1971, we began production of the NCMI in the off-season.

The NCMI has grown at the rate of 40 to 200 occurrences per year in annual updates produced between January and April. The current total is 2530, of which 300 (or about 12%) are in N.W.T. and the remainder are in Yukon. Most of the data has been verified in the field in conjunction with mineral exploration. Computerization is now underway and search capability is already available through computerized indexes of company names, metals and deposit types.

Northern B.C. Inventory (NBCI)

In response to expressions of interest and support from many of our NCMI subscribers, we started in 1983 to expand southward into northern B.C. Including our current work, this new Inventory contains about 1925 occurrences in forty-one 1:250,0000 scale mapsheets (about 40% of B.C.). Current plans call for gradual growth (as fast as the market will bear) to cover the entire area north of latitude 51°N (the area south of 51° covers about 25% of the mapsheets and 49% of the mineral occurrences in British Columbia Government MINFILE). Our NBCI has been entered on a word processor with complete search capability.

The area covered to date by the NCMI and NBCI exceeds 425,000 square miles, which is larger than Ontario (Figure 1). Although both files consist of exploration-oriented descriptions of occurrences that have been compiled by experienced exploration personnel, there are a few differences between the two files that reflect the amount and quality of data, research and field verification they have received. The principal difference is that the NCMI incorporates all targets that have been staked (including those with no reported mineralization), whereas NBCI (and the government MID Files with which we are familiar) are restricted primarily to those targets on which assessment data has been filed. The NBCI is restricted to mineral deposits whereas both our NCMI and MINFILE include coal and asbestos occurrences and Minfile also includes other industrial minerals such as gravel.

Because the NCMI is our most detailed file, and is perhaps the most comprehensive exploration file in Canada, I am going to devote most of my time to describing it.

PREPARATION OF THE NCMI

In our experience, "exciting" news travels very quickly and is well publicized (although it is occasionally delayed by major companies for competitive or administrative reasons), and "encouraging" news is usually preserved for posterity in assessment reports or private files. Unfortunately, much of the remainder is regarded as "insignificant" or not of current economic interest and this information is eventually discarded, forgotten or buried in dead files. This is particularly true in this period of restraint with resulting mergers, layoffs, policy changes, and closures.

The key to this effort is to preserve as much mineral occurrence data as possible without putting an artificial bias on what is significant. As any experienced explorer knows, "significance" is an extremely subjective and transitory opinion when applied to exploration results. Changing mineral economics and new information and concepts can completely alter one's perception of what is exciting or important and worth documenting. Valuable old data which was considered worthless is often lost. In a large exploration organization with the usual turnover of personnel, and pressure to concentrate on current problems and opportunities, retrieval of specific old data sometimes becomes a formidable task. We have even encountered situations where our MID Files aided corporations in retrieving forgotten data from their own field records.

In addition to recording what was done, our MID Files also show when and by whom. This indicates to subscribers who they should contact in order to obtain more information, which is invaluable because the quality of data varies tremendously with advances in technology.

From field experience in exploration and extensive contact with our subscribers, we have learned over the years that they insist on three things - that our inventory be COMPREHENSIVE, ACCURATE and CURRENT. Before I describe how we achieve these goals, it is helpful to review the main steps in the delineation of a mineral deposit and the types of data that are generated at each stage. These are displayed in a simple matrix diagram (Figure 2). The exploration steps are summarized as follows.

STAKING - Claims are staked for a variety of reasons - on previously known occurrences, on new discoveries, on geochemical or geophysical anomalies and geological targets, on unexplored land that is well situated adjacent to an occurrence, or sometimes for frivolous reasons. Most staking is related to mineralization although the quality of useful data varies tremendously. While claim records are public information, the purpose for staking can usually be obtained only through personal contact with the staker. While little information from this phase of exploration normally finds its way into government MID Files, we consider it the basic first step in our work. Most claim stakers we contact share our view that this data should be saved for posterity, and are cooperative, even when they have an immediate preference for privacy, because they trust us. We rely strictly on personal contact rather than correspondence or form letters. For claims staked in previous years, the secret to success in learning the reason for staking lies in identifying the individuals who had performed or supervised the work and then refreshing their memories about the details of the claims. In the case of claims staked by or for corporations, some familiarity with the industry is essential in identifying the individuals who were associated with the work. In the case of the NCMI, we have traced the involvement of over 1200 corporations or joint ventures.

PRELIMINARY EXPLORATION - Results of exploration work (assessment reports) must be filed with the provincial and territorial governments in order to maintain title. The quality and quantity of this data varies tremendously. This becomes public information after a confidential period and this delay period is quite long in some jurisdictions (e.g. in Yukon it does not end until the entire property has lapsed). In those jurisdictions, short summaries of the most important results are usually published annually by the government, including non-sensitive information contained in confidential reports.

Important data is often deliberately or inadvertently withheld from assessment reports in many jurisdictions. In fact, some assessment reports barely meet minimum professional standards. Vital information such as trench and drill assays and detailed mapping is sometimes missing. Among the reasons cited for withholding data are: protection of a perceived exploration advantage; fears that the confidential nature of the information will not be adequately protected by government or will be cribbed by civil servants; the high cost of preparing complete reports; and, lack of incentive or opportunity to receive credit for all of the expenditures made. As well, the final stage of work is sometimes not compiled or submitted if it is discouraging and a decision has been made to abandon the property. In spite of these limitations, those assessment reports that are submitted form the foundation of most government MID Files.

In our work, we supplement the information in assessment reports in a number of ways. One of these is a careful comparison between the work history reported by the explorer and that actually described in the reports in order to identify work that has not been filed. Another approach is to monitor highly visible work such as bulldozer trenching, drilling and underground development. This is important because some jurisdictions, paradoxically, have less stringent reporting standards for the results of so-called "physical work" than for geological and related

	SCIENTIFIC AND ECONOMIC STUDIES	EXPLORATION DATA (ASSESSMENT REPORTS)	MLZN FOUND AND REPORTED BUT NOT EXPLORED	MLZN FOUND BUT NOT REPORTED TO GOVERNMENT	NO MLZN FOUND
STAKING			X	X	X
PRELIMINARY EXPLORATION		X	X	X	X
ADVANCED EXPLORATION	X	X			

Figure 2 INFORMATION MATRIX SHOWING RELATIONSHIP BETWEEN EXPLORATION STAGES AND TYPE OF DATA

	SCIENTIFIC AND ECONOMIC STUDIES	EXPLORATION DATA (ASSESSMENT REPORTS)	MLZN FOUND AND REPORTED BUT NOT EXPLORED	MLZN FOUND BUT NOT REPORTED TO GOVERNMENT	NO MLZN FOUND
STAKING			H	M	H
PRELIMINARY EXPLORATION		H	H	H	H
ADVANCED EXPLORATION	H	H			

AMOUNT OF AVAILABLE INFORMATION CONTAINED IN FILE		
	L	LOW
	M	MODERATE
	H	HIGH

Figure 3 INFORMATION MATRIX SHOWING RELATIONSHIP BETWEEN EXPLORATION STAGES AND TYPE OF DATA –NCMI

surveys. And, finally, some companies report more to their shareholders or to their Securities Commission or Stock Exchange than they do in their assessment reports so this is sometimes a very fruitful source of valuable exploration information. Once again, we solicit or verify this information through personal contact.

ADVANCED EXPLORATION - As an occurrence increases in importance from a prospect to a deposit (with measured reserves) or to a producer, it is subjected to more sophisticated evaluation, such as ore reserve calculations, investigation of possible mining methods, and feasibility studies. It may also be the subject of a university thesis or a detailed scientific study by government or company geologists, all of which become part of the public record. Government MID Files tend to become fairly complete at this stage of exploration and the gap between our files and government files narrows.

A detailed list of the sources reviewed in the preparation of the NCMI is appended. Assessment reports, government maps and reports, and published scientific studies on which most government MID Files are built make up only a modest portion of the total, although this portion becomes increasingly important as an occurrence develops into a significant deposit (Figures 3 and 4). Virtually all of the others are accessible to any careful researcher. The only special advantage we may have is our familiarity with the explorer and our opportunities for personal approach.

COMPARISONS BETWEEN NCMI AND GOVERNMENT MID FILES

Since no one knows the actual number of mineral occurrences that have been discovered within the area encompassed by the NCMI, the only means we have for measuring success in achieving our goal of a comprehensive MID File is to compare the NCMI against current government inventory data. The three examples from the Northern Cordillera have been selected for comparison because they are recent and no criticisms of these authors is implied or intended. In fact, we have the highest respect for what they are have achieved within the restrictions placed on them If there is criticism implied, it is of the policy of allocating talented people to expensive projects that have such limited exploration or scientific value.

(1) Gold-Silver Deposits and Occurrences in Yukon Territory by J.A. Morin and D.A. Downing (DIAND Open File, 1984) lists 410 occurrences with index-level data and a thumbnail sketch of the mineralogy, grade and work history where known. By comparison, the Yukon portion of NCMI provides a more complete description for 638 gold or silver occurrences, indicating that current DIAND files contain only two-thirds of those known to subscribers of the NCMI. Of even more concern, DIAND omits key data such as assays in many cases.

2. Geology of Canadian Tungsten Occurrences by Robert Mulligan (GSC Economic Geology Report 32, 1984). This report, which was based on a 1978 manuscript, lists 45 occurrences in the Northern Cordillera (Canada's most important tungsten district) in tabular form and describes three in detail (Cantung, Mactung and Logtung). The Cantung Mine produced 78% of Canada's tungsten to the end of 1983 and the region contains over 90% of Canadian reserves of tungsten. In spite of that, the section dealing with the Northern Cordillera was seriously incomplete and outdated when it was prepared and published. For example, the report contained outdated ore reserves, quoting 1972 reserves for Mactung (40% of 1978 figures), 1977 reserves for Cantung (larger than 1983 figures) and 1978 reserves for Logtung

	SCIENTIFIC AND ECONOMIC STUDIES	EXPLORATION DATA (ASSESSMENT REPORTS)	MLZN FOUND AND REPORTED BUT NOT EXPLORED	MLZN FOUND BUT NOT REPORTED TO GOVERNMENT	NO MLZN FOUND
STAKING			L		
PRELIMINARY EXPLORATION		M	L		
ADVANCED EXPLORATION	H	H			

AMOUNT OF AVAILABLE INFORMATION CONTAINED IN FILE		
	L	LOW
	M	MODERATE
	H	HIGH

Figure 4 INFORMATION MATRIX SHOWING RELATIONSHIP BETWEEN EXPLORATION STAGES AND TYPE OF DATA – Govt. MID File

(88% of 1983 figures). Five other important deposits with measured reserves (Garnet, Risby, Lened, Bailey and Clea) and important prospects such as Kalzas were not mentioned. During the period when EGR 32 was being prepared, by comparison, NCMI contained detailed descriptions of the following tungsten occurrences: 1978 - 136; 1981 - 180; and, 1984 - 209.

3. Copper Deposits and Occurrences in Yukon Territory by Janet T. Carriere, W.D. Sinclair and R.V. Kirkham (GSC Paper 81-12) is a compilation of index-level data on Yukon copper occurrences within the portion of CANMINDEX called CUFILE. It includes a classification of copper occurrences, the history of copper exploration within the territory and brief CUFILE listings for 367 occurrences. By comparison, the 1981 revision of NCMI contained 694 copper occurrences within Yukon.

In British Columbia, our initial experience in compiling the NBCI suggests that MINFILE contains, on average, about 80% of the well known mineral occurrences that are described in its own collection of public assessment reports, in its own publications and in the local press. Part of the discrepancy has been caused by a poor revision record but the others were simply missed in the original compilation. Based on our experience with the NCMI, we would expect to increase our file by at least one-third by incorporating occurrences that were not described in assessment reports. In other words, MINFILE probably contains no more than 60% of the actual mineral occurrences in an average NTS mapsheet.

Accuracy is easier to measure if one has a close familiarity with the subject. I don't think anyone would argue that the best way to ensure accuracy is to stress the use of experienced personnel, regular review, and an ongoing committment to improve the product. The pressure to produce a MID File that is commercially viable is perhaps the best guarantee of all.

In our experience, most errors in government MID Files are caused by inadequate familiarity by the compilers with the data base and the exploration community and a lack of field verification. One of the most common errors is the duplication of a single occurrence under different claim or company names. Errors are also common when one explorer works on a number of nearby occurrences in the same year and the results are incorrectly assigned to the wrong occurrence. Other mistakes occur when nearby occurrences with different mineralogy and work history are combined into one point on the map, when locations are misplotted, and when typographical errors creep into numerical data such as latitude, dimensions, compass directions, and assays.

In terms of staying current, Government MID Files that we are familiar with have not met satisfactory standards, even through the relatively prosperous years of the past decade. Although Yukon Territory has no MID File as such, it has had a good record in making information submitted by industry available to the public. It enjoys a publication lag of two years for its annual review (now called Yukon Exploration and Geology). By comparison, the equivalent report for N.W.T. has had a publication lag of up to five years in recent times.

In British Columbia, the record has been just as bad. No systematic revision of MINFILE has been completed since 1979, while the last years for which thumbnail assessment report summaries have been published are 1979 and 1981, and microfilm copies of assessment reports are not available for reports submitted after mid-1981. Assessment reports in B.C. are confidential for one year after the end of the claim year in which the work is performed. In other words, reports filed on claims with expiry dates prior to March 13, 1983 would be open for inspection today although, for all practical purposes, they would be unavailable outside of the Victoria office until microfilm copies were distributed to other government centres.

CONCLUSIONS AND RECOMMENDATIONS

Government MID Files and published mineral indices familiar to us have achieved only limited success in providing a useful service to the exploration sector of the mining industry. In most cases, however, service to the exploration sector is the rationale used to justify these expenditures of public money. We believe that our performance has shown that the private sector can provide better service to industry in terms of quality, accuracy and speed, and can do it with LITTLE OR NO EXPENDITURE OF PUBLIC MONEY. We further believe that this is a service function to industry that should logically be provided by the private sector on a commercial basis, and that considerable opportunities exist across Canada for initiatives similar to our own. These services can be provided by entrepreneurial people with regional exploration backgrounds and contacts plus the incentive to dig deep for the missing information.

Government MID Files have two advantages over private sector files, however. The first is that a government label acts as a seal of approval and leads many people to assume that the contents mus be reliable. The most obvious advantage, though, is low price because of heavy subsidies. Since the present industry market is too small to support both government and private sector files, private sector efforts lacking equivalent subsidies are doomed to failure if they compete head on. We recommend close scrutiny of future expenditures of public money on this type of service, even at relatively modest historic levels. We are alarmed at suggestions from either government or industry to increase the funding for these files, especially if it is directed towards provision of better computer access. Present files hardly warrant improved access since they are of such limited value. That would seem like cosmetic improvement to a product that the world may not need.

Using British Columbia as an example since it is the province with which we are most familiar, we estimate that it will require at least 25 person-years, assuming average civil service productivity, to turn the present MINFILE into a current and comprehensive exploration MID File. It will then require an additional 2 to 4 person-years in addition to what it has been receiving in the past few years to maintain it at a current level. This is over and above any person-years dedicated to computer processing and delivery of the information. At a time when field programs are so seriously underfunded, map and report publication is so far behind schedule and even such inexpensive services as assessment report microfilming are delayed, we feel that a better allocation of available funds is possible.

Having criticized what has been happening recently at the policy level in the field of MID Files, we would now like to offer some constructive suggestions. The starting point is surely to define specific roles for the federal and provincial/territorial governments and industry to ensure that future expenditures result in better files, more geoscience data and more mines.

For discussion purposes, a schematic representation showing the relationship between quality of data and status of mineral occurrences is helpful (Figure 5, modified from Figure 1 of GSC Paper 78-8 on CANMINDEX).

THE FEDERAL ROLE

Defining a role for the federal government that takes into account provincial/territorial sensitivities and jurisdiction over mineral resources is always a delicate matter. In our view, there is an important role for the federal government to play, although not in the actual compilation of data on most of the individual occurrences in Canada. Several examples of how this role can be filled are discussed below. Figure 6 shows the portion of the dated field that we consider of federal interest.

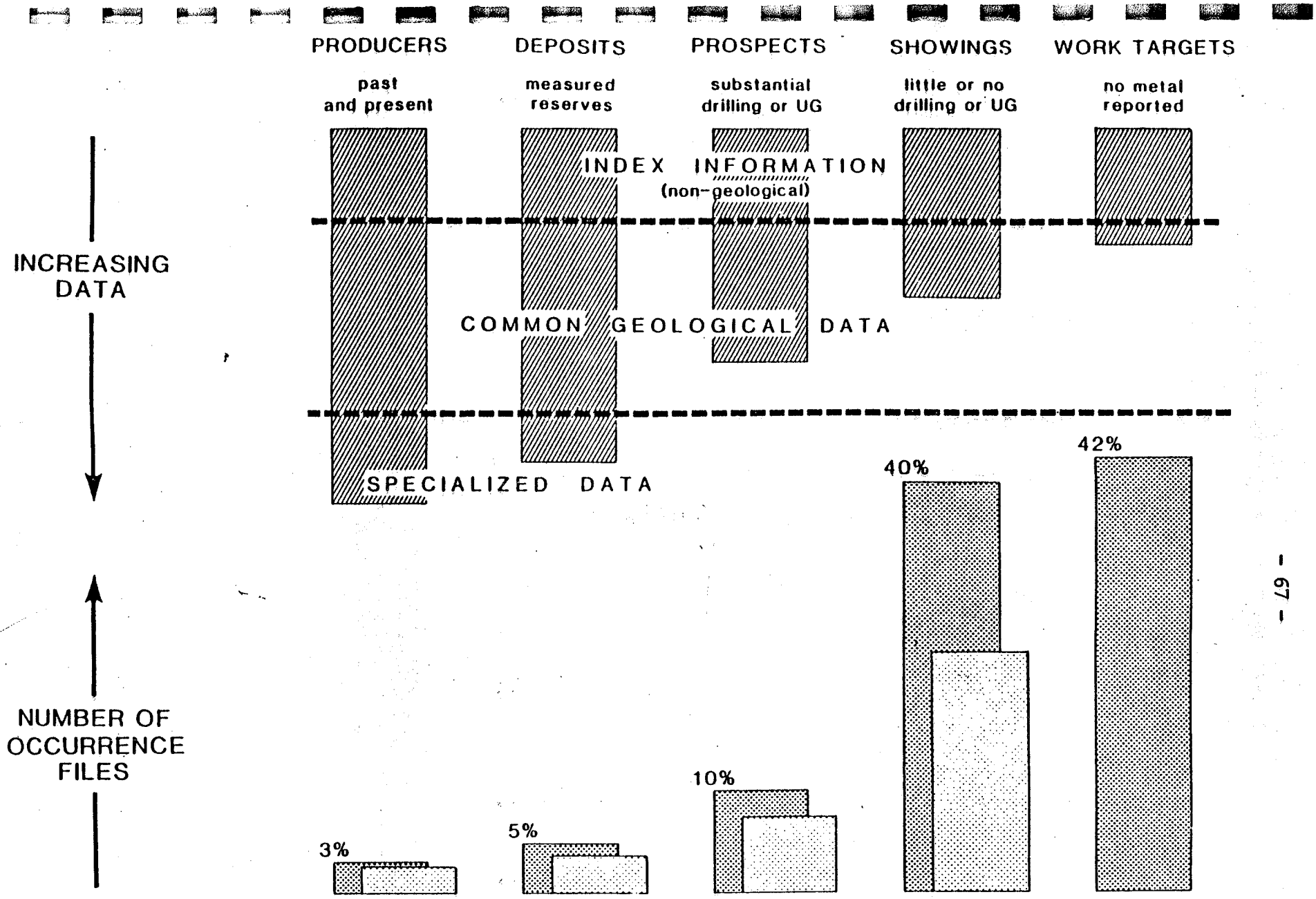


Figure 5 SCHEMATIC REPRESENTATION OF THE DISTRIBUTION OF AVAILABLE MINERAL DEPOSITS DATA AND RELATIVE NUMBERS OF OCCURRENCE FILES (Modified from CANMINDEX, GSC Paper 78-8, Figure 1)

GOVERNMENT MINERAL DATA FILES

NORTHERN CORDILLERA MINERAL INVENTORY
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

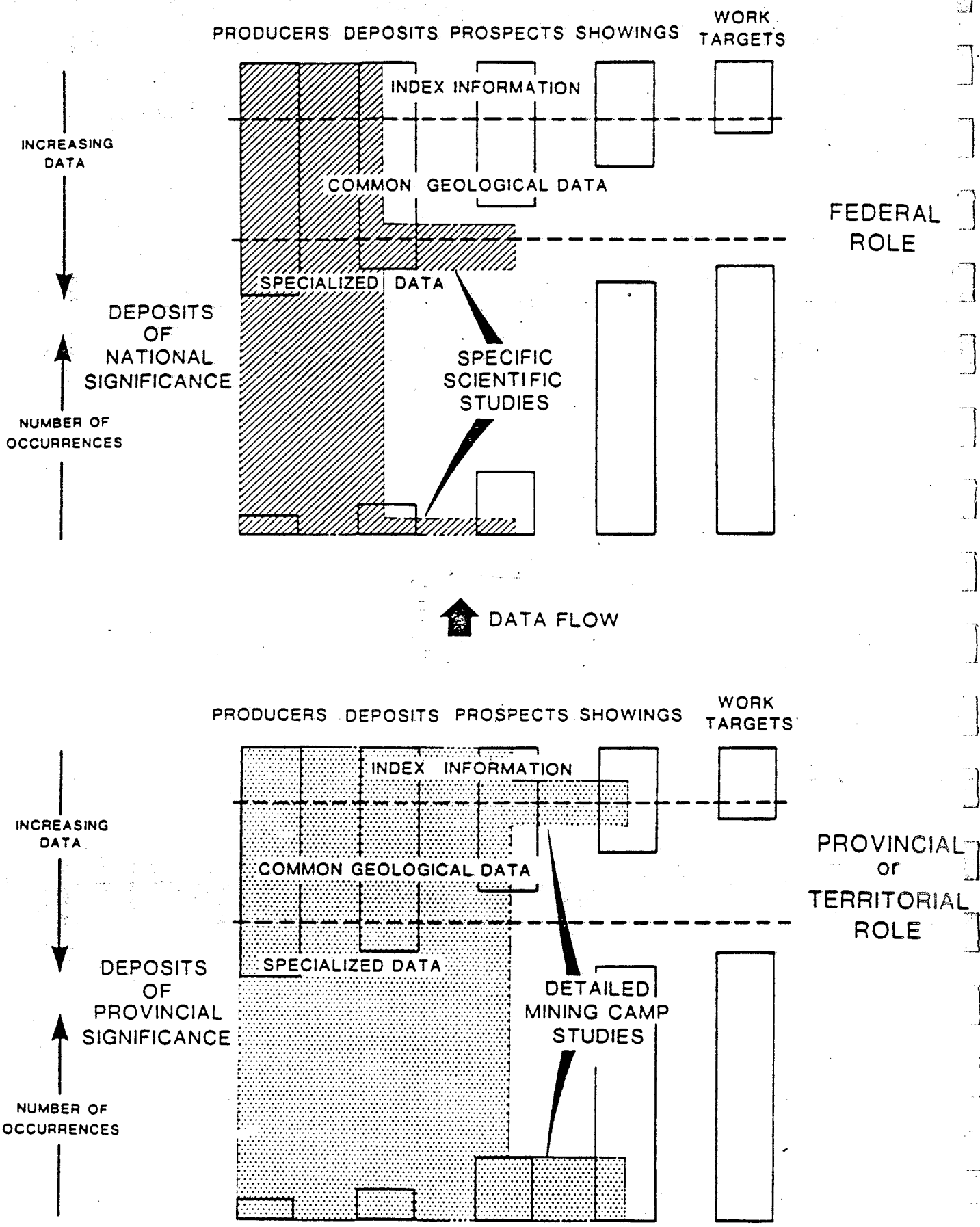

PRODUCERS DEPOSITS PROSPECTS SHOWINGS
WORK TARGETS
INDEX INFORMATION
COMMON GEOLOGICAL DATA
SPECIALIZED DATA
SPECIFIC SCIENTIFIC STUDIES
FEDERAL ROLE
INCREASING DATA
DEPOSITS OF NATIONAL SIGNIFICANCE
NUMBER OF OCCURRENCES
DATA FLOW
PRODUCERS DEPOSITS PROSPECTS SHOWINGS
WORK TARGETS
INDEX INFORMATION
COMMON GEOLOGICAL DATA
SPECIALIZED DATA
DETAILED MINING CAMP STUDIES
PROVINCIAL or TERRITORIAL ROLE
INCREASING DATA
DEPOSITS OF PROVINCIAL SIGNIFICANCE
NUMBER OF OCCURRENCES

Figure 6

(1) Preparation and maintenance of detailed information on important Canadian deposits in readily accessible form. We would include here current and past producing mines (above some realistic size threshold) and unmined deposits that are important on a national scale.

(2) National summaries based on the above. This would include existing publications such as MR 198 (Canadian Mineral Deposits not Being Mined in 1983) as well as commodity studies that would integrate work normally produced separately by the Earth Science and Mineral Policy Sectors. Rather than the approach followed in the tungsten example referred to earlier (GSC Econ. Geol. Report 32), we would recommend that a more appropriate model would be GSC Paper 83-31 (Oil and Natural Gas Resources of Canada, 1983). It is a much better investment of government funds because it is an integrated appraisal involving geology, engineering and economics and is useful to a wide audience including industry. The resulting document would focus on what is most significant from a national perspective and answer such questions as: "Is Canada short of tungsten?; "How and where does our tungsten occur?"; "What is our international position?"; "Where will the next mines probably be located?"; "When will the current mines be depleted?"; and, "What economic factors affect this commodity most?".

(3) Preparation of specialized reference or scientific files to support earth science research by governments, universities and industry.

(4) Coordination and leadership to encourage standardization between industry and provincial MID Files.

(5) Provision of a central clearing-house service to handle public enquiries and direct them to regional sources of information.

THE PROVINCIAL/TERRITORIAL ROLE

The provincial/territorial role, as we envisage it, is naturally much larger than the federal role (Figure 6). In the field of MID Files, we regard the following as highest priority.

(1) Provision of a permanent repository for assessment reports and improvements to this part of the MID File data base. In particular, this should include better quality control on assessment reports, better incentives to industry to encourage submission of exploration results for properties that will be abandoned or whose expenditure value is in excess of currently available credits, higher geological requirements in connection with physical work (especially assays), and faster access (through microfilming) to the reports themselves.

(2) Field verification of occurrences by staff geologists in connection with property examinations, camp studies or commodity projects.

(3) Preparation and maintenance of detailed information on important provincial/territorial deposits in readily accessible form. These would be patterned on the federal files described earlier but would naturally have a lower selection threshold. Included as part of this function would be the preparation of publications summarizing commodity information that is significant at the provincial/territorial level.

(4) Incentives (where necessary) to encourage the production of MID Files by the private sector.

THE INDUSTRY ROLE

We envisage the operation of regional, service bureau-type firms offering current information on mineral occurrences, with these firms under continual business pressure to improve and update their product in order to remain competitive. The best example that comes to mind is the well log-retrieval service offered to the petroleum industry.

NORTHERN CORDILLERA MINERAL INVENTORY SOURCES OF DATA
(Dates shown have been reviewed in detail)

1. GOVERNMENT
   - Files
     - Claim staking and work history records - 1895 on (DIAND)
       (Some historical information is in Yukon & National Archives)
     - Exploration reports and drill logs submitted by industry for assessment credit - 1960 on (DIAND)
     - Survey plans and group sheets - 1895 on (Legal Survey Div, Emr)
   - Reports & Maps
     - GSC - 1886 on
     - DIAND - 1968 on
     - Other - Can Mines Branch, USGS, etc
   - Misc Publications
     - Gazetteers of Yukon & N.W.T.
     - Yukon Bibliography
     - Index of Assessment Reports

2. INDUSTRY
   - Exploration information not submitted in assessment reports
     - stored in private files
     - submitted to Securities Commissions and Stock Exchanges
   - Summaries submitted to shareholders - annual and progress reports
     (some are published in technical and trade publications - see below)

3. PUBLICATIONS
   - Mainly Scientific and Technical
     - CIM Bulletin - 1900 on
     - Can Mineralogist - 1957 on
     - Scientific & Mining Press (San Francisco) - 1900-1920
     - Economic Geology - 1950 on
     - Can Jour of Earth Sciences - 1963 on
     - Specific papers in other Journals, such as Amer Mineralogist
   - Mainly Reviews of Industry Activity
     - Northern Miner - 1962 on (plus old corporate clipping files)
     - George Cross News Letter (Vancouver) - 1952 on
     - Western Miner, The Miner - 1935-1980
     - Can Mining Journal - 1946-1980
     - Engineering & Mining Journal (New York) - 1895-1910
     - Today's Market Line (Vancouver) - 1983 on
     - Can Mines Handbook - 1957 on
     - Financial Post Survey of Mines - 1966 on
     - Mining Review - 1981 on
     - Misc books such as Can Mines Register of Dormant & Defunct Companies
     - B.C. & Yukon Chamber of Mines - corporate clipping files - 1920 on
   - Mainly History
     - Non-fiction history books
     - Specific papers in Journals such as Can Geog Jour, Alaska Mag, Beaver, etc
   - Newspapers
     - Whitehorse Star - 1901-1937; 1966 on
     - Yukon News - 1966 on
     - Dawson Daily News - 1899-1954
     - Klondike Nugget - 1898-1903
     - Yukon Sun - 1898-1904
     - Yukon World - 1904-1909

4. OTHER
   - University Theses and other class projects - graduate and undergraduate
   - Proceedings of technical meetings such as Northern Resources Conferences, Commonwealth Congress Tour Guidebooks, GAC Symposia

6.7 COMINCO'S EXPERIENCE IN PREPARING MINERAL DATA FILES

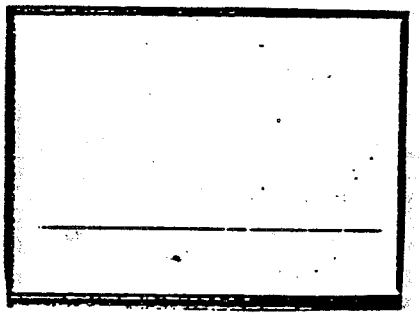
A Talk Delivered at the

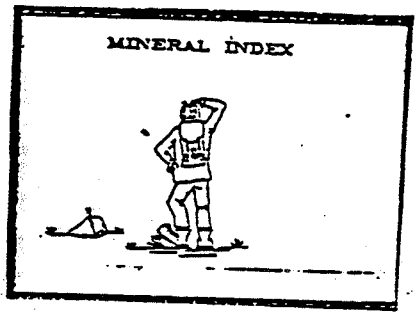
G.S.C, Workshop

"Mineral Inventory Data Files"

Royal York Hotel, March 14, 1985

Mit D. Tilkov
COMINCO LTD., Vancouver





MR. CHAIRMAN
LADIES AND GENTLEMEN

- COMINCO LTD. IS A PRETTY BIG COMPANY WITH A HISTORY DATING BACK TO THE EARLY 1900'S.

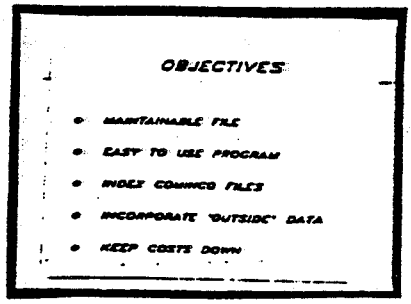
- FROM THE BEGINNING, NUMEROUS COMPANY GEOLOGISTS HAVE WONDERED HOW THEY MIGHT SUMMARIZE,

- AND LEAVE BEHIND THEM A RECORD OF THEIR KNOWLEDGE OF MINERAL DEPOSITS SO THAT THE NEXT GENERATION OF GEOLOGISTS COULD BENEFIT FROM THEIR EXPERIENCE.

- IN 1981, COMINCO EXPLORATION STARTED TO LOOK AT THE PROBLEM OF BUILDING A COMPUTERIZED MINERAL OCCURRENCE FILE.

- VARIOUS MANUAL INDEXES HAD BEEN TRIED,

- AND ONE COMPUTERIZED FILE HAD COME AND GONE IN THE LATE 1960'S.



- WHEN WE STARTED OUR CURRENT PROJECT, WE SET OURSELVES SOME GOALS.

- THE FIRST THING WE REALIZED WAS THAT WE HAD TO BE REASONABLE.

- LOOK NOT AT WHAT WE'D LIKE TO SEE,

- BUT INSTEAD AT WHAT LEVEL OF INDEX WE WERE CAPABLE OF MAINTAINING.

- NOT ONLY DO YOU HAVE TO ENTER NEW PROPERTIES, YOU WOULD ALSO HAVE TO UPDATE EXISTING INFORMATION TO KEEP THE DATA BASE CURRENT.

- WE HAD TO LOOK AT WHO WE THOUGHT WOULD DO THE WORK.

- AND HOW MANY PEOPLE WOULD BE AVAILABLE,

- BECAUSE THIS WOULD AFFECT THE TYPE AND AMOUNT OF INFORMATION WHICH SHOULD BE CODED.

- ONLY AFTER ESTABLISHING THE FORM AND CONTENT OF THE DATABASE COULD WE CONSIDER OUR COMPUTER PROGRAM.

- THE PROGRAM WHEN DESIGNED, HOWEVER, WOULD HAVE TO BE VERY POWERFUL IN ITS UPDATE, SEARCH & REPORTING CAPABILITIES.

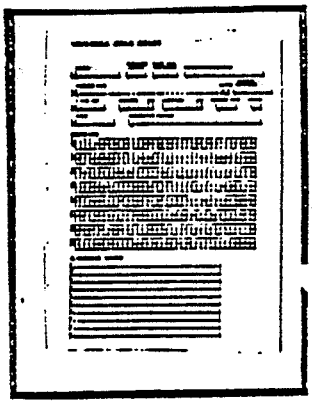
- AND IT WOULD HAVE TO BE EXTREMELY EASY TO USE IN ORDER TO ENCOURAGE CONTINUED MAINTENANCE OF THE DATA-BASE IN THE FUTURE.

- OUR INITIAL GOAL WAS TO CATALOGUE OUR OWN FILES.

- BUT ADDING IN OTHER AVAILABLE DATA WHERE POSSIBLE WAS THE OBVIOUS EXTENSION.

- AND OUR LAST OBJECTIVE WAS TO MAINTAIN REASONABLE COSTS - ESPECIALLY FOR ON-LINE STORAGE,

- AS WELL AS COSTS OF UPDATING, SEARCHING AND REPORTING.



- BY THE TIME WE HAD FINISHED CONSIDERING ALL OF OUR OPTIONS, OUR DATA INPUT FORM LOOKED LIKE THIS.

- AS WE LOOKED AT THE RESOURCES WE HAD AVAILABLE TO MAINTAIN THE FILE,

- AND AFTER WE'D CHECKED ON THE QUALITY OF INFORMATION THAT WE COULD EXPECT FROM OUTSIDE SOURCES,

- THIS IS WHAT WE ENDED UP WITH.

- IF YOU CAN'T READ THE FIELDS, WE'VE GOT ROOM FOR A UNIQUE COMINCO OCCURRENCE NUMBER,

- PROVINCE, ENTRY OR REVISION DATE,

- SPACE FOR UP TO 8 ELEMENTS OR COMMODITIES,

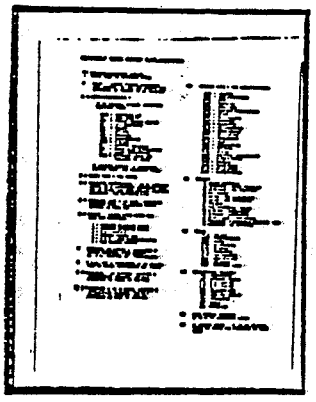
- THE PROPERTY NAME AND TWO CROSS-REFERENCE FIELDS

- THE THIRD LINE HAS LOCATION INFORMATION LIKE N.T.S. MAP SHEET AND LATITUDE AND LONGITUDE,

- AS WELL AS "STATUS" AND "DEPOSIT TYPE" FIELDS.

- AND WE'VE ALSO GOT ROOM FOR ROCK TYPES, EXPLORATION METHODS, GEOLOGICAL COMMENTS,

- AND SPACE FOR UP TO 10 ALTERNATE NAMES FOR THE DEPOSIT.



- THIS FORM OF DATA ENTRY IS FOR GEOLOGISTS WHO MAY NOT WISH TO ENTER THE INFORMATION THEMSELVES.

- THE CHEAT SHEET ON THE LEFT IS DISTRIBUTED WITH THE FORM.

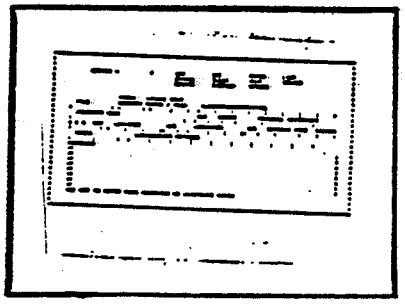
- IT GIVES INSTRUCTIONS AND SHOWS MOST OF THE VALID CODES WHICH CAN BE ENTERED.

- A MORE COMPLETE SET OF INSTRUCTIONS IS AVAILABLE WITH THE SYSTEM DOCUMENTATION IN CASE MORE DETAILED INFORMATION IS REQUIRED.

- AS I SAID,

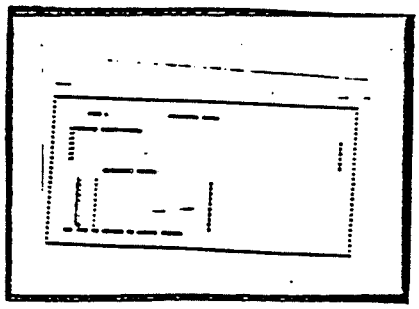
- ONE OF OUR GOALS WAS TO MAKE THE WHOLE SYSTEM EASY TO USE - TO ENCOURAGE ENTERING AND UPDATING OF THE INFORMATION.

- ALL OF THE INFORMATION CAN BE ENTERED ON ONL PAGE AS SHOWN....



- OR ALL OF THE <u>SAME</u> INFORMATION CAN, IN MOST CASES,

- BE ENTERED ON ONE DATA ENTRY SCREEN

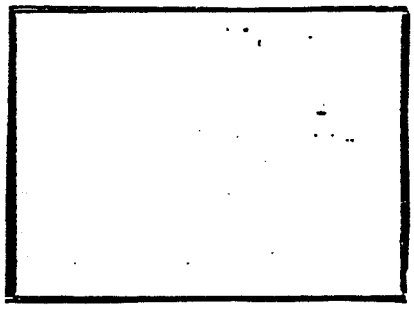


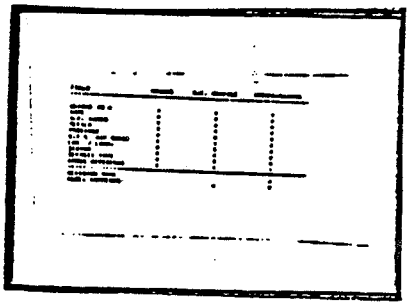
- ONLY RARELY IS A SECOND SCREEN REQUIRED FOR FURTHER GEOLOGICAL COMMENTS OR ALTERNATE NAMES.

- THE TYPE OF DATA REQUIRED, AND THE LACK OF COMPLEXITY IN ENTERING THE DATA,

- MAKE IT EASY FOR ANYONE TO EITHER ADD A PROPERTY,

- OR USING THE SAME PROCEDURES, CHANGE AN EXISTING PROPERTY.





- BEFORE I SHOW WHAT WE CAN DO WITH THIS DATA,

- LET'S COMPARE IT TO SOME OTHER FILES.

- THE ITEMS SHOWN DOWN THE LEFT HAND SIDE ARE THOSE THAT WE ENTER INTO OUR SYSTEM.

- THESE ARE COMPARED TO THE DATA AVAILABLE ON THE MINSYS TAPE, B.C. MINFILE AND THE ARCHER AND CATHRO YUKON TERRITORIES DATA.

- WHICH ALTHOUGH NOT AVAILABLE IN COMPUTERIZED FORM, WAS MANUALLY CODED INTO OUR FILES.

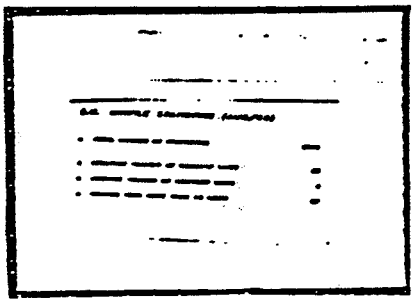
- OF ALL OF THE DIFFERENT ITEMS THAT ARE RECORDED BY THE VARIOUS ORGANIZATIONS,

- THE ONLY DATA THAT THEY HAVE IN COMMON WITH EACH OTHER IS SHOWN BETWEEN THE DASHED LINES.

- BELOW THE LINE ARE THINGS WE INCORPORATED ANYWAY - REVISION DATE, GEOLOGICAL COMMENTS,

- AND I FORGOT TO SHOW EXPLORATION METHODS OR WORK HISTORY WHICH CAN BE GLEANED FROM THE MINSYS TAPE,

- AND IS WELL RECORDED IN THE ARCHER AND CATHRO FILE.

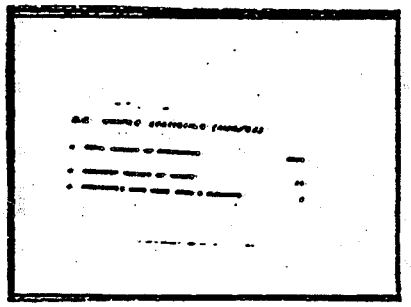


- WE USED THE AVAILABLE COMPUTERIZED DATA TO SEE WHAT AMOUNT OF INFORMATION WE COULD EXPECT FOR A PROPERTY IN THESE CATEGORIES.

- FOR INSTANCE OUT OF APPROXIMATELY 8600 PROPERTIES CATALOGUED IN B.C. MINFILE,

- ONLY 57 PROPERTIES REQUIRED MORE THAN 14 LINES OF GEOLOGICAL COMMENTS.

- THE AVERAGE NUMBER OF COMMENT LINES WAS FOUR.



- B.C. MINFILE ALLOWED AN UNLIMITED NUMBER OF PROPERTY NAMES - THE MAXIMUM RECORDED WAS 11.

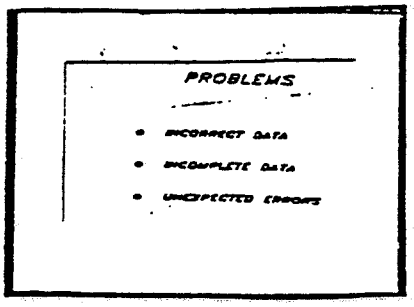
- ONLY 2 PROPERTIES HAD MORE THAN 8 ELEMENTS.

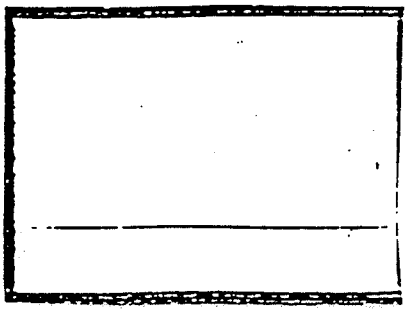
- WE USED STATISTICS LIKE THESE TO GUIDE US IN OUR DATA BASE DESIGN.

- BY CHOOSING REASONABLE MAXIMUMS FOR DIFFERENT DATA FIELDS,

- LIKE 14 LINES OF COMMENT, 10 ALTERNATE NAMES AND 8 ELEMENTS,

- WE WERE ABLE TO CONTAIN ALL OF THE INFORMATION ON THE EASY TO USE FORMS AND INPUT SCREENS THAT I SHOWED PREVIOUSLY.





- WHEN WE HAD ESTABLISHED OUR DATA FILE FORMAT, WE FOUND THAT WE WERE STILL GOING TO BE FACED WITH MAJOR PROBLEMS.

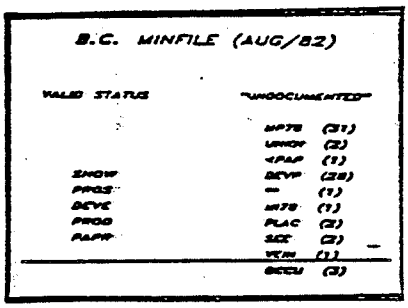
- NOT ONLY DID EVERY FILE DIFFER IN CONTENT AND FORMAT,

- BUT TO SOME DEGREE,

- WITH EVERY OUTSIDE FILE, THAT WE USED, WE FOUND ERRORS.

- FOR INSTANCE, OUR COMPUTER PROGRAM EDITS DATA HEAVILY.

- ON OUR FIRST RUN IN WITH THE B.C. MINFILE TAPE, WE FOUND HUNDREDS OF PROPERTIES WITH LATITUDES AND LONGITUDES THAT DIDN'T MATCH THE N.T.S. MAP SHEET THAT HAD BEEN ENTERED.



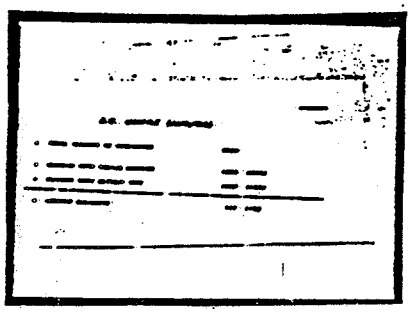
- WE ALSO FOUND THAT THERE WERE 10 EXTRA, UNDOCUMENTED STATUS CODES.

- EDIT CHECKS AND LOOK-UP TABLES ARE EASY TO PUT INTO PROGRAMS

- AND I'M SURE EVERYONE HERE AGREES THAT

- <u>DATA MUST BE EDITED CAREFULLY</u>.

- I'M STILL TRYING TO FIGURE OUT WHAT STATUS MP78 IS.



- IF WE LOOKED AT HOW COMPLETE THE DATA WAS IN THE AREAS WE WERE INTERESTED IN,

- WE CAN SEE FOR INSTANCE THAT STATUS WAS ONLY FILLED IN 20% OF THE TIME,

- AND DEPOSIT TYPE IS ONLY ENTERED FOR 18% OF THE PROPERTIES.

- 1% OF THE PROPERTIES WERE MISSING ANY MENTION OF ELEMENTS OR COMMODITIES.

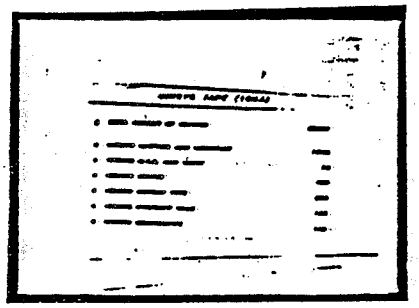
- WHEN I CHECKED BACK ON THESE, A LOT OF THEM TURNED OUT TO BE DESCRIPTIONS OF DISTRICTS IN B.C., INSTEAD OF INDIVIDUAL OCCURRENCES.

- FOR INSTANCE, THERE WERE SUMMARIES OF THE YMIR CAMP, ROSSLAND CAMP, HEDLEY, AND THE SHEEP CREEK AREA.

- ARE THESE OCCURRENCES?

- I THINK A DECISION HAS TO BE MADE FROM THE START EXACTLY WHAT A MINERAL OCCURRENCE IS,

- AND HOW IT SHOULD BE ENTERED.



- LEST THE PEOPLE THAT SUPPLIED US THE MINSYS TAPE ARE LEANING BACK TOO COMFORTABLY,

- HERE'S YOUR STATISTICS.

- WE ORIGINALLY GOT A TAPE WITH ABOUT 20,000 ENTRIES.

- 7 OR 8% OF THEM WERE MISSING CO-ORDINATES ENTIRELY -

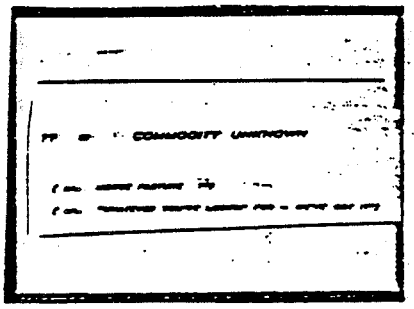
- A FEW WERE MISSING MAP SHEET.

- AND, AS YOU CAN SEE, VARIOUS OTHER OCCURRENCES WERE MISSING STATUS,

- DEPOSIT TYPE, PROPERTY NAMES, OR COMMODITIES.

- AND LASTLY, ALTHOUGH THE ARCHER AND CATHRO DATA WAS VERY GOOD IN MOST RESPECTS,

- WE FINALLY HAD TO GIVE UP AND CREATE A NEW ELEMENT CODE . . .



- FOR THOSE PROPERTIES THAT HAD NO INDICATION OF ELEMENTS OR COMMODITIES.

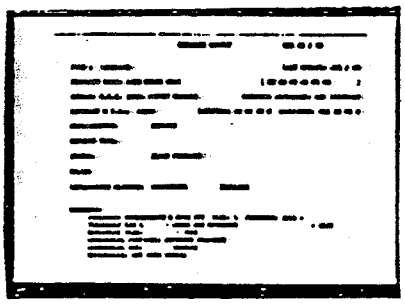
- THERE WERE EXACTLY 161 SUCH PROPERTIES IN THE YUKON DATA.

- AND OUR PROGRAM WAS DESIGNED TO SPIT THEM OUT.

- THE DOUBLE QUESTION MARK IS NOW OFFICIALLY DESIGNATED AS COMMODITY UNKNOWN,

- BUT GEOLOGISTS INTERPRET THE CODE IN VARIOUS OTHER WAYS....

- WE'VE RUN INTO A FEW OTHER PROBLEMS ALONG THE WAY.



- FOR INSTANCE, WHAT TO DO WITH INFORMATION THAT IS CODED ON THE MINSYS TAPE,

- FOR WHICH WE HAVE NO EQUIVALENT FIELD.

- AS SHOWN HERE, WE CONSTRUCT COMMENTS FROM THE REMAINING DATA.

- OR THERE'S THE COMPLETELY UNEXPECTED ERRORS.

- WE MADE ALLOWANCES FOR ABOUT 200 DUPLICATE NAMES IN OUR DATA BASE - AFTER ALL, HOW MANY PROPERTIES CALLED SILVER KING CAN THERE BE?

- WELL WE LITERALLY BLEW AWAY OUR B.C. MINFILE DATABASE TWICE

- BEFORE WE FIGURED OUT THAT THERE WERE 325 PROPERTIES CALLED "OCCURRENCE"

- PLEASE DON'T GET ME WRONG.

- I KNOW THAT A TREMENDOUS AMOUNT OF EFFORT HAS GONE INTO COLLECTING THE INFORMATION CONTAINED IN THE 3 FILES THAT I'VE BEEN TALKING ABOUT.

- AND I KNOW THAT WE'RE CERTAINLY GRATEFUL TO BE ABLE TO GET AHOLD OF THEM AND USE THE DATA FOR OURSELVES.

- BUT IF I HAVEN'T MADE MY POINT YET,

- LET ME DO SO NOW.

- IT'S MY BELIEF THAT THE <u>QUALITY</u> OF THE INFORMATION IN THESE FILES SHOULD BE A MUCH MORE IMPORTANT CONSIDERATION THAN THE <u>QUANTITY</u>.

- IF YOU CAN'T THROW THE NECESSARY RESOURCES FOR COLLECTING <u>ALL</u> OF THE DATA THAT YOU WANT TO INCORPORATE INTO THE FILES,

- THEN MAYBE YOU SHOULDN'T BE ATTEMPTING TO GATHER IT.

- DATA THAT IS OUT OF DATE

- OR IMCOMPLETE TO THE EXTENT I'VE SHOWN HERE, IS REALLY NOT VERY USEFUL

- AND IN SOME INSTANCES ISN'T EVEN TRUSTWORTHY.

- T THINK A GREAT DEAL OF THE PLANNING STAGES THAT THE FEDERAL AND PROVINCIAL SURVEYS ARE PRESENTLY GOING THROUGH

- SHOULD NOT BE CONCERNED WITH DATABASE PROGRAM CHALLENGES, OR CAD/CAM POSSIBILITIES

- BUT ON DEVISING A FRAMEWORK FOR COLLECTING AND DISSEMINATING AS MUCH INFORMATION AS IS REALISTICALLY POSSIBLE

- IN A STANDARDIZED FORMAT.

- THE DECISIONS ON FILE CONTENT SHOULD BE BASED ON THE NUMBER, AND CALIBRE OF THE PEOPLE WHO WILL BE AVAILABLE TO ENTER NEW PROPERTIES

- AND THE FURTHER NUMBER OF PEOPLE WHO WILL BE REQUIRED FOR MAINTAINING OR UPDATING EXISTING INFORMATION.

- WHEN COMINCO DESIGNED IT'S INHOUSE SYSTEM,

- IT WAS REALLY AN INDEX WITH A BRIEF SUMMARY,

- THAT MAKES NO ATTEMPT TO REPLACE A GOOD GEOLOGICAL REPORT.

- WE FEEL THAT WE'VE CAPTURED MOST OF THE INFORMATION THAT NEEDS TO BE DISPLAYED,

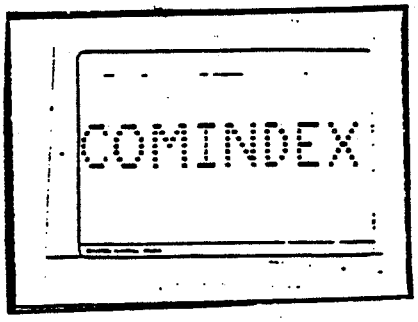
- AND WE'RE ABLE TO MAKE POWERFUL SEARCHES ON THE KEY FIELDS THAT WE'VE DEFINED.

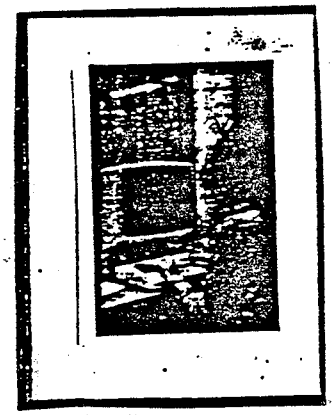
- WE'RE TRYING VERY HARD TO UPDATE OUR OWN COMINCO DATA, AND AS MUCH AS POSSIBLE,

- FILL IN THE MISSING KEY INFORMATION IN THE OTHER FILES.

- TO DO THIS, WE'VE DESIGNATED A DATA BASE ADMINISTRATOR AND WE'VE HIRED A SUMMER STUDENT EVERY YEAR FOR THE LAST 4 YEARS TO HELP HER OUT.

- THIS YEAR WE HOPE TO HIRE 2 OR MAYBE 3 MORE STUDENTS,



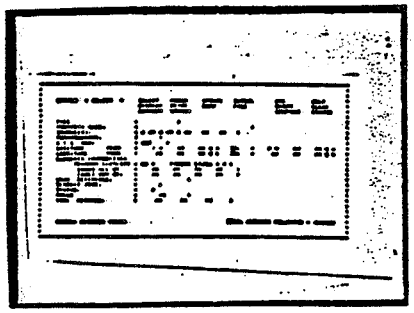


- WE CALL OUR SYSTEM COMINDEX. IT RUNS ON A LARGE IBM 3081 CENTRAL COMPUTER

- THAT CAN BE ACCESSED FROM ANYWHERE IN CANADA ON TERMINALS LIKE THE ONE SHOWN HERE.

- THE PROGRAM HAS BEEN RUNNING FOR 3½ YEARS NOW AND HAS BEEN REVISED TWICE.

- THIS YEAR WE PLAN MORE ENHANCEMENTS BUT NONE OF THESE HAVE YET AFFECTED HOW DATA IS COLLECTED, OR ENTERED, INTO THE SYSTEM.



- USERS MAKE SELECTIONS AND REQUEST ALL OUTPUT FROM A SINGLE SCREEN AS SHOWN HERE.

- SELECTION IS JUST A MATTER OF FILLING IN THE BLANKS BESIDE ANY KEY FIELD THAT YOU'RE INTERESTED IN.

- IF YOU WANT ALL COPPER PROPERTIES IN N.T.S. MAP SHEET 82F, YOU JUST ENTER OPTION "SELECT",

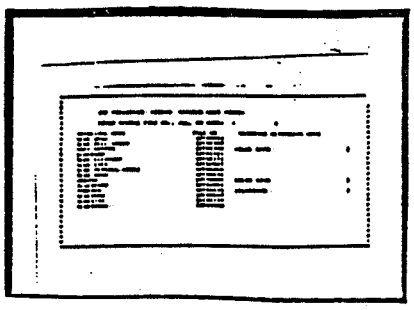
- AND FILL IN "82F" WHERE THERE'S ROOM FOR MAPSHEET,

- AND THEN MOVE DOWN AND TYPE "C" "U" IN THE ELEMENT SELECTION AREA.

- YOU CAN ADD TO YOUR SELECTION,

- OR YOU CAN SUBSELECT FROM IT.

- YOU CAN GET A SPECIFIC PROPERTY BY JUST ENTERING IT'S NAME

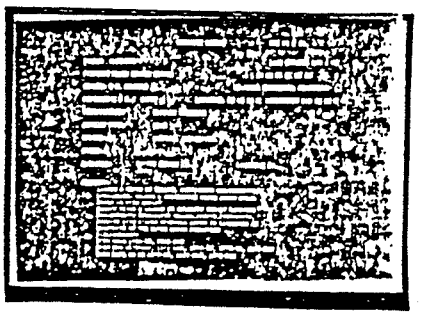


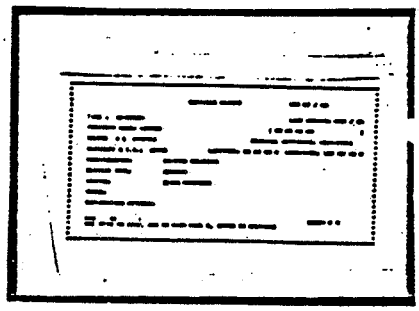
- NAME SELECTION, BY DEFAULT, USES WHAT'S CALLED A GENERIC READ.

- IF YOU DON'T KNOW, FOR INSTANCE, WHETHER BLUE BELL IS TWO WORDS OR ONE, OR WHETHER THERE'S A DOUBLE "L" "E" AT THE END, YOU JUST TYPE "BLUE".

- IF THERE'S A CONFLICT, THE PROGRAM SHOWS A LIST OF MATCHING NAMES OR ALTERNATE NAMES, AS SHOWN HERE,

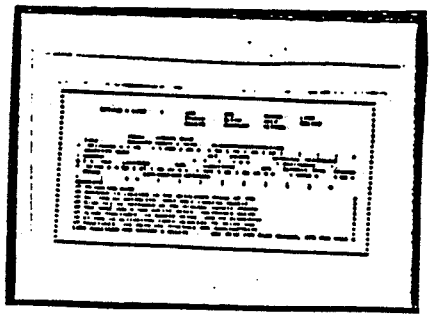
- AND YOU CAN CHOOSE TO SELECT ALL, NONE, OR JUST ONE OF THE ENTRIES.





- YOU CAN PRINT FULL DETAILS OF ALL OF THE PROPERTIES SELECTED ON A PRINTER,

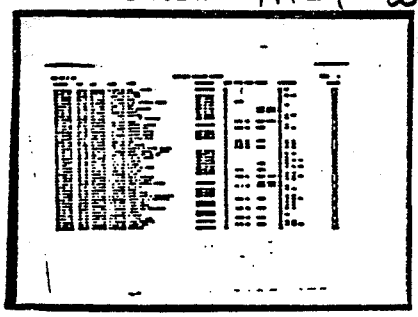
- OR YOU CAN DISPLAY THEM TO THE SCREEN.

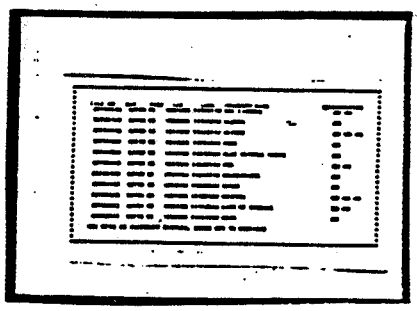


- AS YOU'RE DISPLAYING THE INFORMATION, YOU MAY FIND AN ERROR.

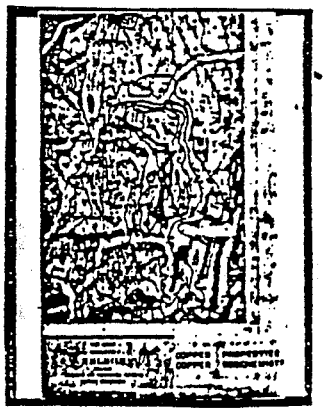
- YOU CAN JUMP STRAIGHT INTO THE UPDATE PORTION OF THE PROGRAM AND ACCESS THE CURRENT SELECTION - AND EDIT IT.

— THIS WAS A REVISION WE MADE TO ENCOURAGE FIXING ERROR WHEN THEY WERE FIRST SPOTTED.





- DATA CAN BE SORTED IN VARIOUS WAYS AND YOU CAN PRINT OR DISPLAY SUMMARIES OF THE PROPERTIES BY ENTERING "SUMMARY" IN THE OPTION FIELD.



- WE CAN ALSO DUMP FILES FOR PLOTTING OUT MAPS LIKE THESE.

- THE ONE ON THE LEFT SHOWS A GEOLOGICAL MAP OF B.C. OVERLAIN BY A MYLAR

- WHICH HAS ALL OF THE GOLD PROPERTIES THAT WE KNOW ABOUT IN B.C.

- THERE ARE ABOUT 3300 PROPERTIES PLOTTED ON THERE,

- AND IF YOU CAN SEE THE 2 COLOURS FROM WHERE YOU ARE,

- RED SHOWS PROPERTIES WHERE GOLD IS THE PRIMARY ELEMENT LISTED,

- WHILE BLUE DESIGNATES PROPERTIES WHERE GOLD EXISTS BUT ISN'T THE MOST IMPORTANT ELEMENT.

- THE MAP ON THE RIGHT SHOWS COPPER PROPERTIES ON PART OF THE NELSON MAP SHEET IN B.C.,

- WITH CONTOURED GOVERNMENT REGIONAL GEOCHEMISTRY DATA OVERLAIN.

- SO EVEN WITH THE DATA THAT WE'VE CURRENTLY GOT, THE PROGRAM IS IMMENSELY USEFUL.

- IF WE COULD GET BETTER, MORE COMPLETE DATA,

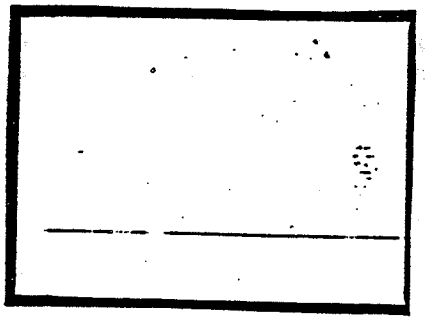
- WE WOULD BE ABLE TO EXPAND AND REFINE OUR OWN SYSTEM,

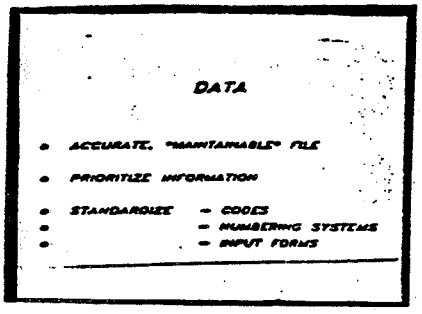
- AND IT'S USEFULNESS COULD ONLY INCREASE.

- IF I CAN LOOK BACK NOW, FOR A MOMENT,

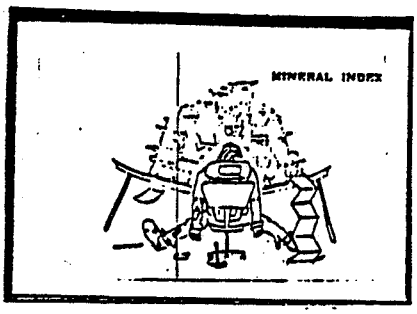
- AT COMINCO'S EXPERIENCE WITH COLLECTING BOTH THEIR OWN DATA AND THAT WHICH IS AVAILABLE FROM OUTSIDE SOURCES,

- I'D LIKE TO MAKE SOME COMMENTS





- THE MOST IMPORTANT THING IS THE DATA ITSELF.



- IF YOU ATTEMPT TO CREATE COMPLETE GEOLOGICAL REPORTS WITH EVERY SINGLE PIECE OF GEOLOGICAL INFORMATION FLAGGED AS AN IMPORTANT KEY FIELD,

- YOU'LL EITHER KILL YOUR RESEARCHERS FROM OVERWORK,

- OR THE DATA WILL REMAIN TOO INCOMPLETE OR TOO OUT OF DATE, TO BE USABLE.

- THE OTHER ALTERNATIVE IS TO HIRE A SMALL ARMY TO KEEP DATA CURRENT,

- AND THAT MIGHT BE AN EXPENSIVE SOLUTION.

- I THINK THE OPERATIVE WORD HERE IS INDEX.

- PUT THE MOST IMPORTANT INFORMATION INTO THE MINERAL INVENTORY FILES AS KEY WORDS AND PROVIDE AN UP-TO-DATE BIBLIOGRAPHY OR CROSS REFERENCE,

- AND A BRIEF GEOLOGICAL COMMENT.

- IF YOU CAN KEEP PRODUCTION DATA OR WORK HISTORY CURRENT - THAT WOULD BE GREAT!

- DESIGNATE A FEW FIELDS AS MANDATORY, AND EDIT THEM HEAVILY FOR ERRORS.

- I DON'T THINK ANY PROPERTY SHOULD BE ENTERED WITHOUT A NAME, ACCURATE LOCATION, AND ELEMENTS OR COMMODITIES.

- PROPERTY STATUS CAN BE DETERMINED EASILY,

- AND DEPOSIT TYPE CAN BE DETERMINED MUCH MORE EASILY THAN, SAY, AGE OF MINERALIZATION.

- DATA HAS TO BE ASSIGNED DIFFERENT PRIORITIES

- AND SOME OF IT MAY NOT BE POSSIBLE TO COLLECT RELIABLY.

- CODES THAT ARE USED, IF POSSIBLE, SHOULD BE STANDARDIZED AMONGST THE VARIOUS SYSTEMS,

- SO THAT USERS OF THE INFORMATION AREN'T FORCED TO TRANSLATE STATUS CODES, DEPOSIT TYPES OR ROCK CODES INTO THEIR OWN.

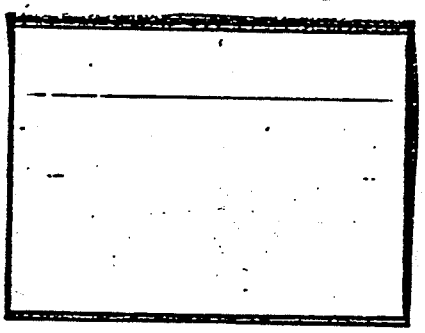
- STANDARDIZING WHERE POSSIBLE SHOULD BE A GOAL

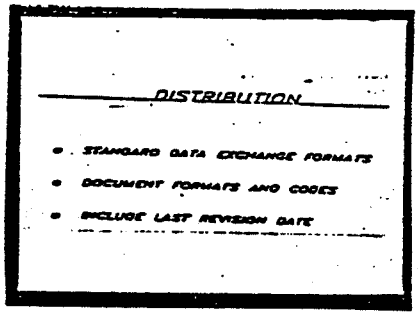
- FOR INSTANCE IF PROPERTY NUMBERING SYSTEMS COULD BE THE SAME EVERYWHERE,

- A LOT OF THE CROSS-REFERENCE DATA COULD BE DISPENSED WITH.

- FEDERAL GOVERNMENT FILES COULD INCORPORATE PROVINCIAL DATA DIRECTLY.

- SIMPLE TO USE, STANDARD AND WELL DOCUMENTED INPUT FORMS MIGHT ENCOURAGE INDUSTRY TO CONTRIBUTE DIRECTLY, INFORMATION TO PROVINCIAL OR FEDERAL GOVERNMENT FILES.





- AND FINALLY, IT WOULD SURE MAKE IT EASY ON EVERYONE IF STANDARDS WERE SET UP FOR DATA EXCHANGE.

- THESE MIGHT INCLUDE FULL DATA BASE DUMPS TO MAGNETIC TAPE,

- OR OPTIONALLY, INDEX LEVEL ONLY DUMPS TO EITHER TAPES OR FLOPPY DISKS FOR USERS WITH MICRO-COMPUTERS.

- IF EVERYONE DISTRIBUTED THE SAME FORMAT OF DATA, USING THE SAME GEOLOGICAL CODES AND ABBREVIATIONS,

- IT WOULD BE SO MUCH EASIER FOR EVERYONE INVOLVED,

- BOTH TO COLLECT INFORMATION, AND TO DISSEMINATE IT.

- LADIES AND GENTLEMEN,

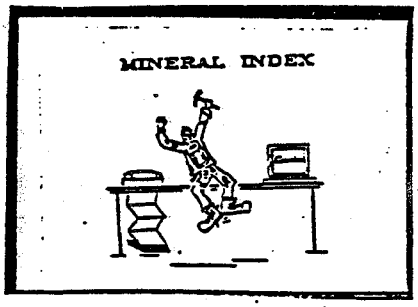
- 15 OR 20 MINUTES IS HARDLY ENOUGH TIME TO TRY AND SUMMARIZE THE EXPERIENCES WE'VE HAD AT COMINCO IN DEALING WITH THESE MINERAL OCCURRENCE FILES.

- BEFORE THE FEDERAL AND PROVINCIAL GOVERNMENTS FINALIZE ALL THE DETAILS,

- I HOPE THEY'LL ASK INDUSTRY TO PARTICIPATE MORE ACTIVELY IN DEFINING THE NEEDS OF SUCH A SYSTEM.

- I KNOW WE'D BE HAPPY TO SHOW WHAT WE'D LIKE TO DO,

- AND I'M SURE THAT OTHER COMPANIES THAT HAVE SET UP THEIR OWN SYSTEMS WOULD HAVE DIFFERENT EXPERIENCES, MAYBE DIFFERENT NEEDS, AND PROBABLY A LOT OF GOOD IDEAS THAT COULD BE INCORPORATED INTO YOUR FILE DESIGNS.



- I THINK MAYBE YOU'D BE HAPPIER WITH YOUR SYSTEM,

- GEOLOGISTS IN THE MINING INDUSTRY WOULD CERTAINLY BE HAPPIER WITH THE INFORMATION AVAILABLE,

- AND I KNOW THAT I'D DREAD THE ARRIVAL OF A NEWLY RELEASED TAPE MUCH LESS,

- IF I KNEW THE INFORMATION CONTAINED WAS STANDARDIZED, COMPLETE, AND RELIABLE

- THANK YOU.

6.8 Notes for talk

Workshop on Mineral Inventory Data Files

Toronto, March 14, 1985

D.C. Findlay

Introduction

At a workshop held in Ottawa nearly 10 years ago (December 1975) on the subject of mineral deposit data files, much of the focus was on cooperation between the federal and provincial governments in building and maintaining data files that would have common elements in format, languages etc. for interchangeability. Probably some of you in this room today will remember that conference and you will agree, I think, if you think back on it, that a great deal has transpired in the mineral data file building business since then. Perhaps we can look at this workshop here this morning, in part, in the sense of a sequel or second phase of the original Ottawa meeting.

What you have been hearing this morning in the preceding talks is a sampling of what has transpired over the past few years. You have heard about federal files in operation in EMR, a representative sampling of provincial files that are currently in use, and some thoughts from industry representatives about its role and experience with mineral files.

My job here this morning is to attempt to briefly set out a framework for considering some of the things that may be in store for us in the future. The panel discussions, which will follow my short interregnum, will hopefully pursue some of the matters I'd like to touch on here as well as others that occur to them and that arise from the general discussions this morning.

Five Points **SLIDE 1**

When we first began talking about the organization of this session several months ago, we thought that we could isolate four general questions or "issues" that might serve as useful focal points for discussion. These were the first four points shown on this slide. The fifth one - "impacts of technology" - was added later, and was really prompted by a suggestion from your Panel Chairman. As I think about it, it seems to me that in the long run, it may be the most important of all five of these "issues".

1. Integration of Federal Files **SLIDE 2**

We have heard about the two basic file systems in place in EMR. As shown in this slide I think it is fair to state that the ultimate parent of the two computerized systems is NMI - the manual National Mineral Inventory. There have been suggestions in the past that CANMINDEX and MINSYS should be combined into one computerized system. You have heard how, in spite of apparent similarities between the two systems, there is a fundamental difference in orientation of the files. In fact, you have heard that CANMINDEX is not a file in the strict sense of the word, but rather is a system for collating and organizing index level informatoin from a variety of other files, some manual, some machine-based. However, as I said the amalgamation of these files in some manner is a topic that has been suggested from time to time in the past and you may wish to consider it further here this morning.

2. Creation of a "National" File **SLIDE 3**

The construction of a "national" file that would result from a consolidation of federal and provincial files in some manner is a concept that frequently

arises, and as I mentioned, it was one of the incentives for the original Ottawa workshop in 1975. This slide illustrates schematically two versions of this concept. However, it can perhaps be argued now that this

concept is no longer real or necessary, given the possibilities of interchange of information between files that exists today, and given that much of the input into, for example, the GSC CANMINDEX system came about as a result of joint operations with many of the provinces and thus duplicate information already exists in federal and provincial files in many cases. However, the principle behind this concept may still be valid and as I will note in a few moments it warrants some discussion here today. It is closely related to the questions of public accessibility and the effects of technology.

3. The Role of Industry SLIDE 4

Mining and exploration companies are, as we have heard this morning, both generators and users of files and file information. Ultimately, of course, the bulk of the basic information on mineral deposits and occurrences in existing federal and provincial files was generated as a result of the activities of companies and individual prospectors. A number of questions could be discussed here today under this general topic. Bob Cathro has already touched on some in his talk a few minutes ago. I have summarized some of the subtopics that occur to me on this slide. I am sure that many other topics will occur to panel members and those of you in the audience from industry.

4. Public Accessibility

The ultimate objective of mineral file systems maintained by government agencies is that they be easily and quickly publicly accessible by users. Between that ideal objective and actual practice there may be many difficulties and constraints, not the least of which may be costs, in terms of dollars and in terms of manpower, to maintain and update files and to ensure public accessiblity to the system. Nevertheless, for non-confidential data, there is little doubt that rapid and easy public accessibility is the ideal objective. How do we achieve this? Perhaps this question more than any of the others is linked to the last point, technology.

5. Impacts of Technology

I return again here to the Ottawa meeting of 10 years ago at which the conversations were naturally cast in the context of hardware and software systems available at the time. Everyone is aware of the explosive evolution in computer hardware and software systems over the past 10 years and conversations taking place today about the construction and maintenance of machine-based files would doubtless be very different from those at the Ottawa meeting because of this factor. Thus questions can usefully be asked about the impacts of technology on mineral inventory files in the future. Most files, for example, are not inordinately large in terms of the size of the data base. Progress in downloading large files onto compact microprocessor systems may make it possible, for example, to convey an entire "national" mineral inventory system around on a disc and run it on a portable the size of a typewriter. The

old concepts of massive, large, integrated files carried on mainframes or minis may not be valid in the future.

Conclusion

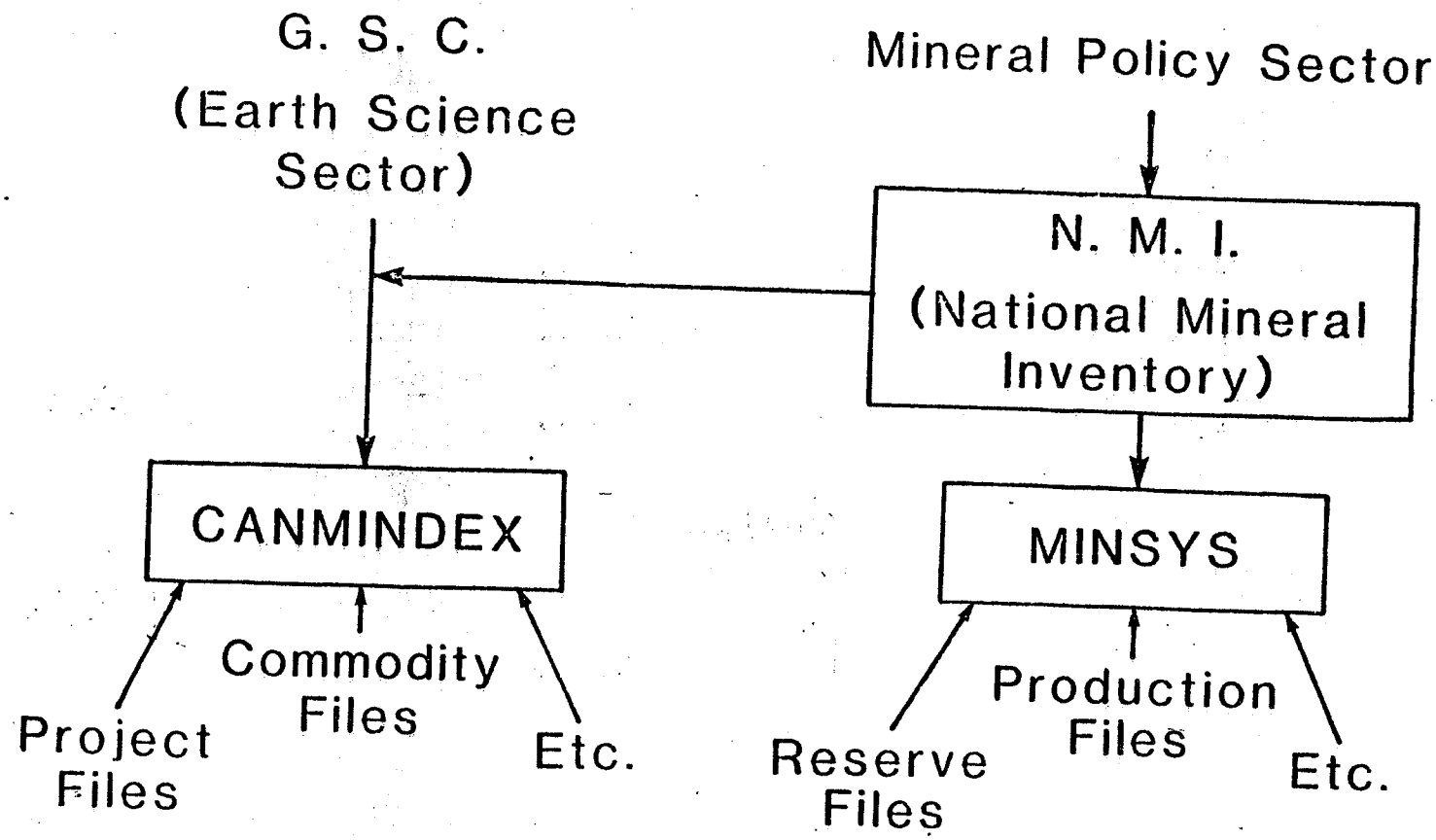
These then are a few of the points that occurred to us in discussing originally the design of this workshop. Obviously, others have surfaced in the papers so far this morning and I am sure that more will come to light in the next hour or so.

SLIDE 1.

MINERAL DATA FILE "ISSUES"
1 CONSOLIDATION OF FEDERAL (E.M.R.) FILES
2 "NATIONAL" (FEDERAL-PROVINCIAL) FILES
3 INDUSTRY ROLE AS A USER AND CONTRIBUTOR TO FILES
4 PUBLIC ACCESSIBILITY
5 IMPACT OF CHANGING TECHNOLOGY

SLIDE 2.

E.M.R. MINERAL DATA BASE SYSTEM

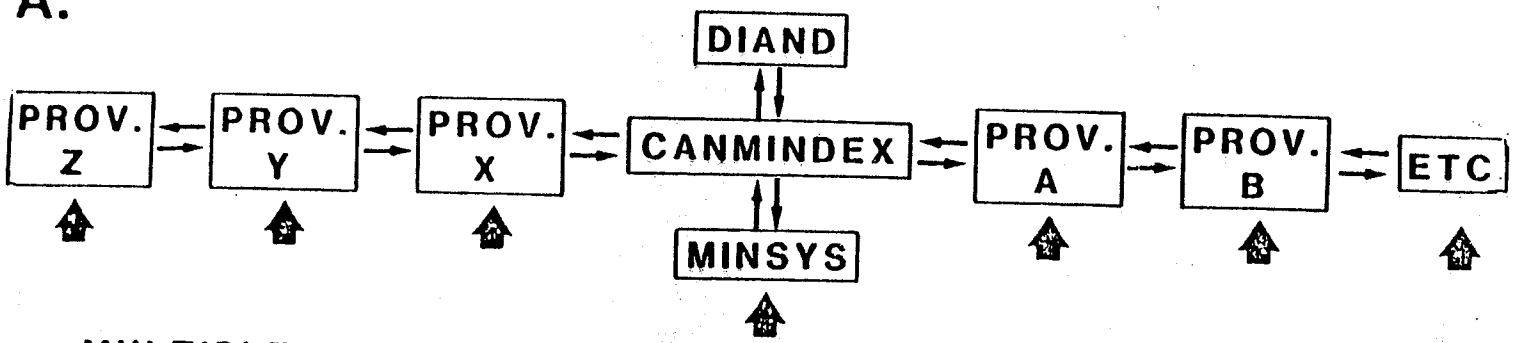


Manual Files

Computerized Files

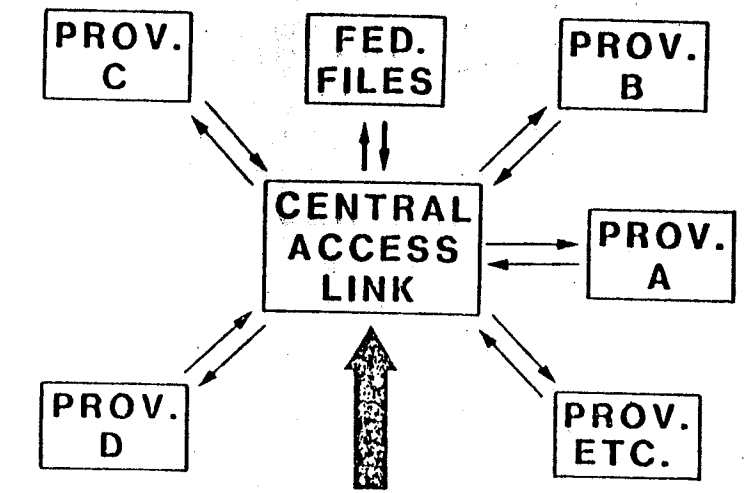
CONCEPTS OF "NATIONAL" FILES

A.



MULTIPLE ACCESS ANYWHERE IN SYSTEM (GEOSCAN MODEL)

B.



ACCESS THROUGH CENTRAL LINK

SLIDE 3.

SLIDE 4.

THE ROLE OF INDUSTRY

A. AS GENERATORS:

- ☐ — Production of commercial inventorie
- ☐ — Contributors through in-house files (non-proprietory information)
- ☐ — Data verification processes
- ☐ — Assessment reports (primary input)
- ☐ — Etc.

B. AS USERS:

- ☐ — Feedback to A (e.g. data verificatio
- ☐ — Financial input (user pay)
- ☐ — User design and improvements
- ☐ — Etc.

CANMINDEX and Source Computer Files on Canadian Mineral Deposits

by

D.F. Garson
Mineral Resource Information Services
Economic Geology and Mineralogy Division
Geological Survey of Canada, Ottawa

Acknowledgements

Most of the following information was gathered from papers presented at the Mineral Inventory Workshop at the PDA meeting in Toronto on March 14, 1985, from government publications and annual reports, and from personnel communication.

CANMINDEX

The original purpose of CANMINDEX was to build a source file[1] of index-level descriptive data for all Canadian mineral deposits and occurrences that could be used by Survey geologists, Mineral Policy Sector groups and, in the long run, by the public. Emphasis was to be on stringent quality control. After much planning and discussion, a joint MPS-GSC pilot project was launched in 1975. Based on the results of that exercise, modifications were made to data content, coding procedures and computer methods, and the file-building began in earnest. It was decided to code economically significant deposits first. The existing MINDEP file for deposits in British Columbia was used as a source of data and Montgomery Consultants Ltd. were contracted to convert it into CANMINDEX ($25,000).

By spring 1977, two critical problems had brought the project to its knees. One was the coding rate which was much slower than expected, in part, due to the exhaustive quality control procedures. Secondly, the technological means to handle the two different views of the data held by MPS and GSC were not apparent. MPS viewed the entity to be coded as a property, with emphasis on their economic-policy requirements, whereas the GSC coded the geological deposit itself. Note that only the latter is fixed in space and time (excluding geological processes as a factor). At this point the two agencies went their own way because the two needs could not be served satisfactorily by a single file.

---

[1] source file: meaning a systematic compilation built to serve public and private sector

MPS continued with their RESERVES file and launched MINSYS, their computer index to the NMI card file. GSC paused to consider their capabilities at this point and concluded that their resources (py°s) were insufficient to continue to build this source file on Canadian mineral deposits. In mid-1977, the GSC decided not to continue building CANMINDEX, but rather to start assisting Economic Geology Division projects in their mineral deposit compilations by using the system developed for CANMINDEX. This included the stringent quality control measures and the actual coding forms originially developed for the file.

In summary then, from 1975 to 1977, the GSC and MPS began building a source file on Canadian mineral deposits and occurrences called CANMINDEX. In 1977, MPS took over full control of the source file building exercise using their NMI card file as the foundation and using modified versions of the coding forms developed for CANMINDEX. GSC meanwhile, concentrated on specialized project file compilations (e.g. copper, uranium) using data from whatever source files were available and using the CANMINDEX system for compiling and integrating various sets of information.

Figure 1 illustrates and summarizes the development of the GSC°s CANMINDEX file from its inception in 1975 to 1984.

Other Files

Figure 2 shows the history of development of source computerized mineral deposit files in Canada. British Columbia had actually started their computerized mineral inventory in 1973 with their MINDEP file and Ontario's Source Mineral Deposit Record (SMDR) file appeared about the same time. EMR hosted a federal-provincial workshop on computerized mineral inventory files in December 1975, and this seemed to spawn activity in the other provinces. In 1975, Manitoba began their MIND file and in 1978 and 1979, Nova Scotia, Quebec, and Saskatchewan began computerized files (Quebec via GSC's CANMINDEX system). As a bonus, many of the files evolved with very similar coding forms and procedures as are used for CANMINDEX.

So the stage that has been set for the last several years has seen the GSC gradually accumulating mineral deposit information into the CANMINDEX computer database based on specific project requirements, MPS building and promoting MINSYS and the NMI card files as EMR's source file and most of the provinces building computerized mineral deposit inventory files.

As shown in Figure 2, the computer file coverage for mineral deposits in the provinces is quite good. The major gaps are New Brunswick, Alberta, Newfoundland and the territories. The Newfoundland file is in the process of being computerized. Using CANMINDEX or MINSYS to fill in those gaps (MINSYS is publically available), there exists computerized data for approximately 29,000 deposits (see Figure 3). This is the source database used by the GSC projects. CANMINDEX is the GSC's system for integrating this data with in-house data (geochemical, digitized geology, geophysical, structural, etc).

The next logical step would be to have New Brunswick, Newfoundland, Alberta and Yukon and Northwest Territories computerize their inventories. These would be added to the GSC's "library" and the geologists would have a complete database on Canadian mineral deposits. Ideally, some system would allow easy access to all the data. At present, GSC relies most heavily on the provincial sets of data and use NMI and MINSYS to fill gaps or to obtain retrievals which span provincial boundaries.

Resources Used

Because such a variety of projects have been developed and tied in with the CANMINDEX system, it is difficult to precisely identify how many person-years and how many dollars have been spent on this database. An estimate of the proportions of person-years used is found in Figure 1. In the first year, much of the effort was on planning, etc. with few deposits actually being coded. Some projects, like the MINDEP conversion, were on contract and used little or no A-base person years. In total however, probably about 27 person years have been expended over the last 10 years in building Economic Geology and Mineralogy Division's present computerized mineral deposit data base. About 16 of those person years have been used for the core CANMINDEX file (index-level information plus bibliography). For 1985, only about 12 person-months will be used overall.

Summary and Future Possibilities

- CANMINDEX was EMR's source file on mineral deposits data from 1975 to 1977

- MINSYS has been EMR's source file on mineral deposits data since 1977

- CANMINDEX is, and will probably continue to be, the GSC'S system for collating and integrating various sets of mineral deposits information

- within the near future, computerized mineral deposits data for the entire country will be available via the provincial governments and D.I.A.N.D.

- perhaps within the next decade, a system to integrate the provincial sets of data will be found

- emphasis will change from manual coding and recoding to electronic transfer and conversion

- electronic means will be used more often to scrutinize data in existing files for quality control

- there is one trend that could be the single most significant obstacle to building a centralized Canadian mineral deposits database - the rush to microcomputers. These personal computers offer low-cost, easy computing, extensive editing features, and, theoretically, allow easy transfer of data from user to user. However, consider the fashion in which they are being used - as a replacement for the standard-issue green filing cabinet found in most geologist's offices.

  Individuals are building mineral deposit data files in the privacy of their offices and, in most cases, to their own set of standards. The microcomputer data storage limitations have given rise to many new sets of abbreviations and even a revived interest in nmeumonic codes. The files may be easily transferred from user to user, but merging data from several different files will be difficult and will require manual recoding. Thus, in practice, sharing of information may not be easier, and may inhibit the development of a centralized system.

Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total
# deposits coded	326	1647	3727	4423	1692	1683	465	175	54	1110	15,302
#pm's used (est):	42	36	48	54	30	30	24	18	12	24	318 (26.5 py)
A. CANMINDEX file building											
- pilot project	--										
- mines & deposits:		------									
- BC MINDEP conversion			-----								
- NS project:			----								
- "STAMP"										---	
B. Project file building using CANMINDEX											
- CUFILE			----------			----					
- U FILE		----------									
- resource assessments						----------					
- Cordilleran metallogeny		---									
- Cu metallogeny, L. Huron			----------								
- shield metallogeny, Manitoba conversion						----					

Figure 1. The history of development of GSC's CANMINDEX database.

Year.....	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Total in file
"Provincial"														
NFLD.....												....----		3000[1]
NS.....								----------						900
NB.....														600[2]
QUE.....							----------							5236[1]
ONT.....	----------													5500
MAN.....		----------												800
SASK.....							----------							1600
ALTA.....														100[3]
BC.....	----------													9000
YUKON.....														1144[2]
NWT.....														2040[2]
TOTAL.....														*29,920*
"National"														
CANMINDEX (GSC)			----------											
MEPI (MPS)....		----------												
MINSYS (MPS)..								----------						20,000?
COMINDEX..... (Cominco)										----------				30,000?

1 - not yet available to public, should be soon
2 - number of deposits in CANMINDEX
3 - estimated number of deposits

Figure 2. The history of development of *source* Canadian computerized mineral deposits databases

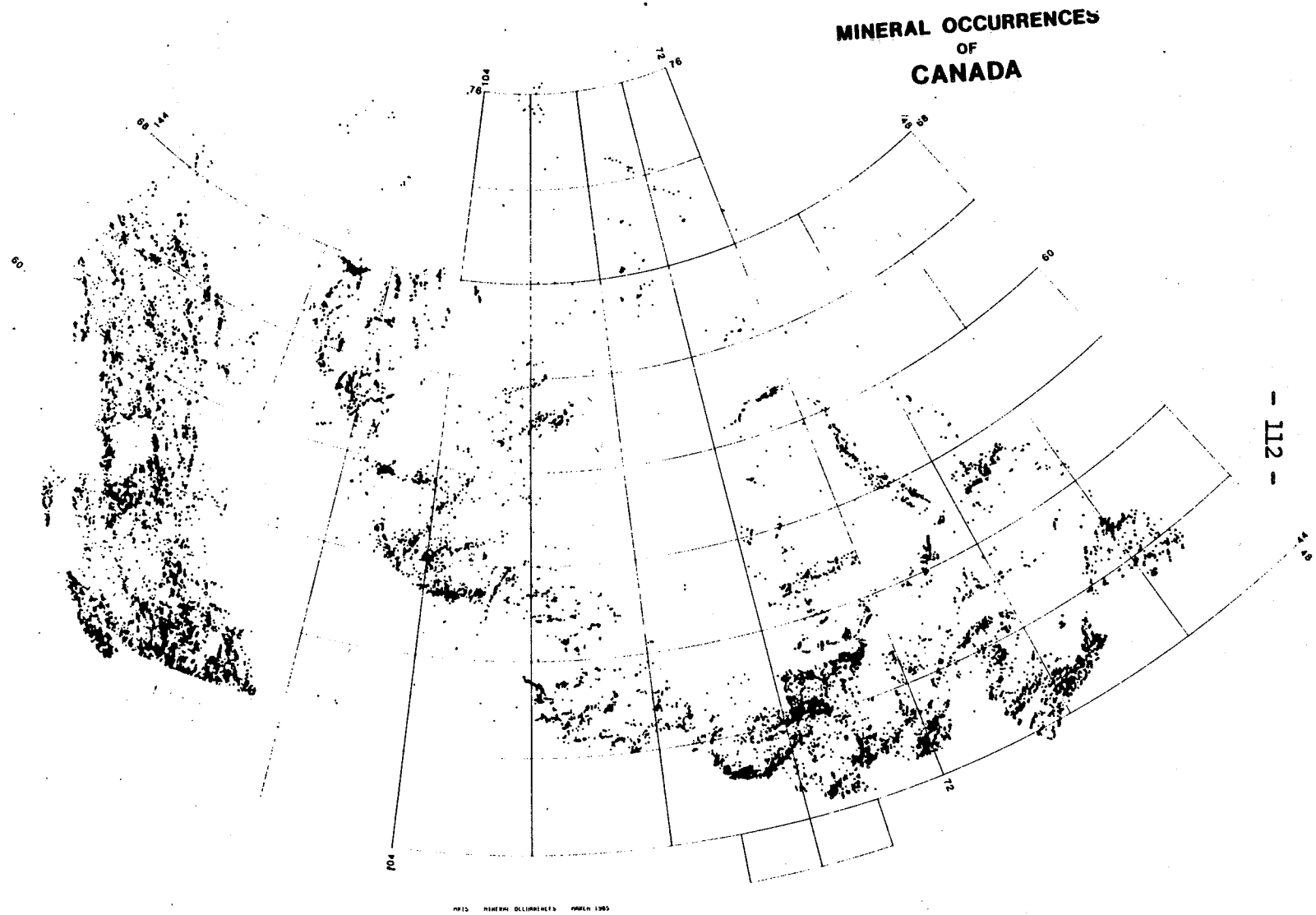


Figure 3. Distribution of data file information about Canadian metallic and non-metallic mineral deposits; approximately 30,000 occurrences are plotted in relation to the primary grid of the National Topographic System.

Products from CANMINDEX

There are two types of products associated with the CANMINDEX database. Firstly, there are the computer printouts and plots that provided to scientists for their use. Secondly, there are the GSC publications that have incorporated data from the CANMINDEX database - i.e. GSC Paper 81-12 "Copper Deposits and Occurrences in Yukon Territory", GSC Open File 716 "Non-Hydrocarbon Mineral Resource Potential of Parts of Northern Canada", D.I.A.N.D. Open File Map 1984 "Gold-Silver Deposits and Occurrences in Yukon Territory".

Examples of the variety of CANMINDEX hardcopy output, which are based on CANMINDEX as a "source" file of mineral deposit data or as a "system" to compile data, are indicated by the title pages of the following 6 publications. These are available to the general public.

GEOLOGICAL SURVEY
PAPER 81-12

COPPER DEPOSITS AND OCCURRENCES IN YUKON TERRITORY

JANET J. CARRIÈRE
W.D. SINCLAIR
R.V. KIRKHAM

1981

GEOLOGICAL SURVEY OF CANADA

OPEN FILE 716

NON-HYDROCARBON MINERAL RESOURCE POTENTIAL OF PARTS OF NORTHERN CANADA

Preliminary resource assessments of parts of Northern Yukon, Mainland Northwest Territories and the Arctic Islands, including islands in Hudson Bay

by

Economic Geology Division

This report presents subjective assessments of the potential of parts of northern Canada to contain resources of uranium, gold, silver, copper, nickel, lead-zinc, iron, molybdenum, and some industrial minerals, in addition to resources of those commodities already known. The assessments vary greatly in detail and degree of confidence, reflecting mainly the variations in current state of the geological information base of the areas in question. For these and other reasons the assessments presented are considered preliminary and, in most cases, much additional work will be required before more accurate assessments can be made.

The area involved in this study includes the extreme northern part of Yukon Territory, the northwest coastal part of Northwest Territories including Mackenzie Delta and adjacent areas, the northeastern part of the District of Mackenzie, all of District of Keewatin including islands in Hudson Bay and all of the Arctic Islands (District of Franklin).

This open file will be available for viewing as of November 14, 1980 at all Geological Survey libraries and at the Resident Geologists' offices in Yellowknife, N.W.T. and Whitehorse, Yukon. Copies may be obtained at that time at the user's expense from GSC offices in Vancouver, Calgary and Ottawa; Resident Geologist's Office, Department of Indian and Northern Affairs, 200 Range Road, Whitehorse, Yukon Y1A 3V1; and Resident Geologist's Office, Department of Indian and Northern Affairs, P.O. Box 1500, Yellowknife, Northwest Territories Y1A 2R3.

PART I

METHODOLOGY AND SUMMARY ASSESSMENTS

PART II

DETAILED ASSESSMENTS AND APPENDIXES

(Includes text figure showing oil and gas potential of parts of northern Canada by Institute of Sedimentary and Petroleum Geology, Geological Survey of Canada)

NOVEMBER, 1980

Open File 788

ASSESSMENT OF MINERAL RESOURCE POTENTIAL IN THE BATHURST INLET AREA, NTS 76J, K, N, O INCLUDING THE PROPOSED BATHURST INLET NATIONAL PARK

S.M. Roscoe

$5.00

1984

G.S.C. Open File 823 - Yukon CUFILE Computer Tape

The computer tape of the Yukon Copper Report data has been created and is resident at the Computer Science Center tape library. It can be identified as follows:

VSN - ER4277
label - CUFILE
type - 9 track, standard labelled
density - 1600 bpi
created - January 27, 1982

G.S.C. OPEN FILE 823 - YUKON CUFILE COMPUTER TAPE

This computer tape contains 395 records of 3200 characters each. The first three records should be printed as 80 character lines (120 lines total). These contain the complete description of the data records, in terms of character positions for all data fields. The actual data file comprises 392 records.

823 YUKON CUFILE COMPUTER TAPE
by Janet J. Carrière, W.D. Sinclair, and R.V. Kirkham

This file contains index-level data for 392 copper deposits and occurrences in Yukon Territory. It includes in fixed length digital records: name(s), location, commodities and status, deposit types, synoptic geological comments, reserves, production, map reference, and bibliography. The contents of this computer tape are also available in printed form as an appendix to GSC Paper 81-12, in which a brief discussion of the geology of these deposits and occurrences is presented. The tape can be obtained, at user's expense, only from Director, Computer Science Centre, Department of Energy, Mines and Resources, Ottawa, Ontario K1A 0E4.

Affairs Canada

Northern Affairs Program

et du Nord Canada

Programme des affaires du Nord

1984 OPEN FILE
GOLD-SILVER DEPOSITS AND OCCURRENCES IN YUKON TERRITORY

BY

J.A. MORIN AND D.A. DOWNING

$4.00

should be a Fact
to get with free

Exploration and Geological Services Division
Mineral Resource Directorate
Whitehorse, Yukon

INTRODUCTION

This Open File report is a map and list presentation of information about 419 mineral occurrences in Yukon which contain noteworthy amounts of gold and/or silver. It is intended to be a beginning point for precious metal investigation and accordingly displays much useful information in a summary point form.

A capsule description of the occurrence's geology is present along with a list of the significant ore minerals. This is followed by some information regarding the metal content of the occurrence and ranges from a reserve estimate to an assay of a grab sample. Finally, the last line summarizes the extent of exploration and development work conducted with the last entry in parentheses referring to the last year of significant work. The common name of an occurrence has been used wherever possible; where not possible, a nearby geographic location or the claim name has been used. Each occurrence is numbered according to a sequential list which generally follows the National Topographic System (NTS) designation. Exceptions are noted.

No doubt, some errors and omissions are present - may every reader of this file please relay these to the authors in order that any future version be as accurate as possible.

Sources

Information presented in these tables and accompanying map is an amalgamation derived from several sources, none of which are specifically credited. The National Mineral Inventory, an NTS-commodity file managed by Mineral Policy Sector of Department of Energy, Mines and Resources was the main source. Annual mineral industry reports prepared by GSC (up to 1968) and DIAND (1969 to 1983) were also consulted. Some previously unpublished data from Division geologists' files were included in addition. The CANMINDEX file maintained by Economic Geology Division of Energy Mines and Resources was available for this compilation. It was used primarily as a comparison to ensure completeness. Further information including reference sources can be found by consulting the latest Yukon Exploration and Geology Report and the National Mineral Inventory.

Acknowledgements

The major compiler of data in the National Mineral Inventory for Yukon Territory is Alf Johnston and his work has been of much value in preparing this report.

Assistance of Dave Garson, GSC and Tom Caine, DIAND in obtaining CANMINDEX gold and silver data is appreciated. Format used on the map is modeled after GSC Paper 81-12 - 'Copper Deposits and Occurrences in Yukon Territory.'

Canada

COPPER METALLOGENY, NORTH SHORE REGION OF LAKE HURON, ONTARIO

Project 700059

William N. Pearson[1]
Regional and Economic Geology Division

Pearson, William N., Copper metallogeny, north shore region of Lake Huron, Ontario; in Current Research, Part A, Geol. Surv. Can., Paper 79-1A, p. 289-304, 1979.

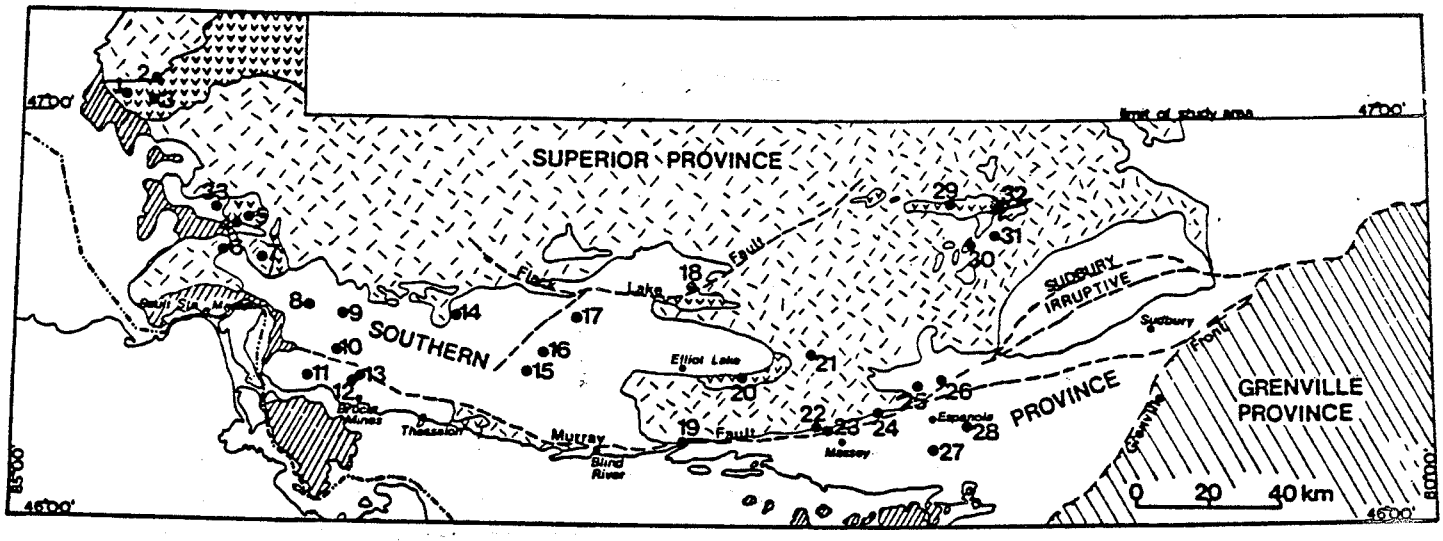
Abstract

Vein deposits, a W-Cu skarn deposit, a Cu-Ni deposit, "sedimentary" copper deposits, and possible volcanogenic exhalative deposits in the north shore region of Lake Huron are described in detail. New subdivisions within several copper deposit groups previously presented (Pearson, 1978) are proposed and a preliminary metallogenic scheme relating copper deposits to major lithologic units and tectonic events is discussed.

Introduction

A study of copper deposits in the north shore region of Lake Huron (N.T.S. 41I, J, K, and N/1, N/2; Fig. 46.1) was initiated in 1977 during which time 104 deposits and occurrences were examined. A tentative classification, brief descriptions of some occurrences and various deposit types, and preliminary thoughts on copper metallogeny were presented (Pearson, 1978). Work in the summer of 1978 focused on detailed mapping of representative deposits with the aim of clarifying genesis. Samples were collected for petrographic, isotopic, and chemical analyses.

The author is grateful to R.V. Kirkham of the Geological Survey of Canada for his continued help in this project and to D. Innes, Ontario Division of Mines, Mineral Deposits Section, in Sudbury, and P. Giblin, Regional Geologist, E.J. Leahy, and G. Bennett of the Ontario Division of Mines in Sault Ste. Marie for their invaluable support during the field work. Many local residents, prospectors, and industry and government geologists gave freely of information, services, and much enjoyed hospitality. R.V. Kirkham reviewed the manuscript and offered many helpful suggestions.



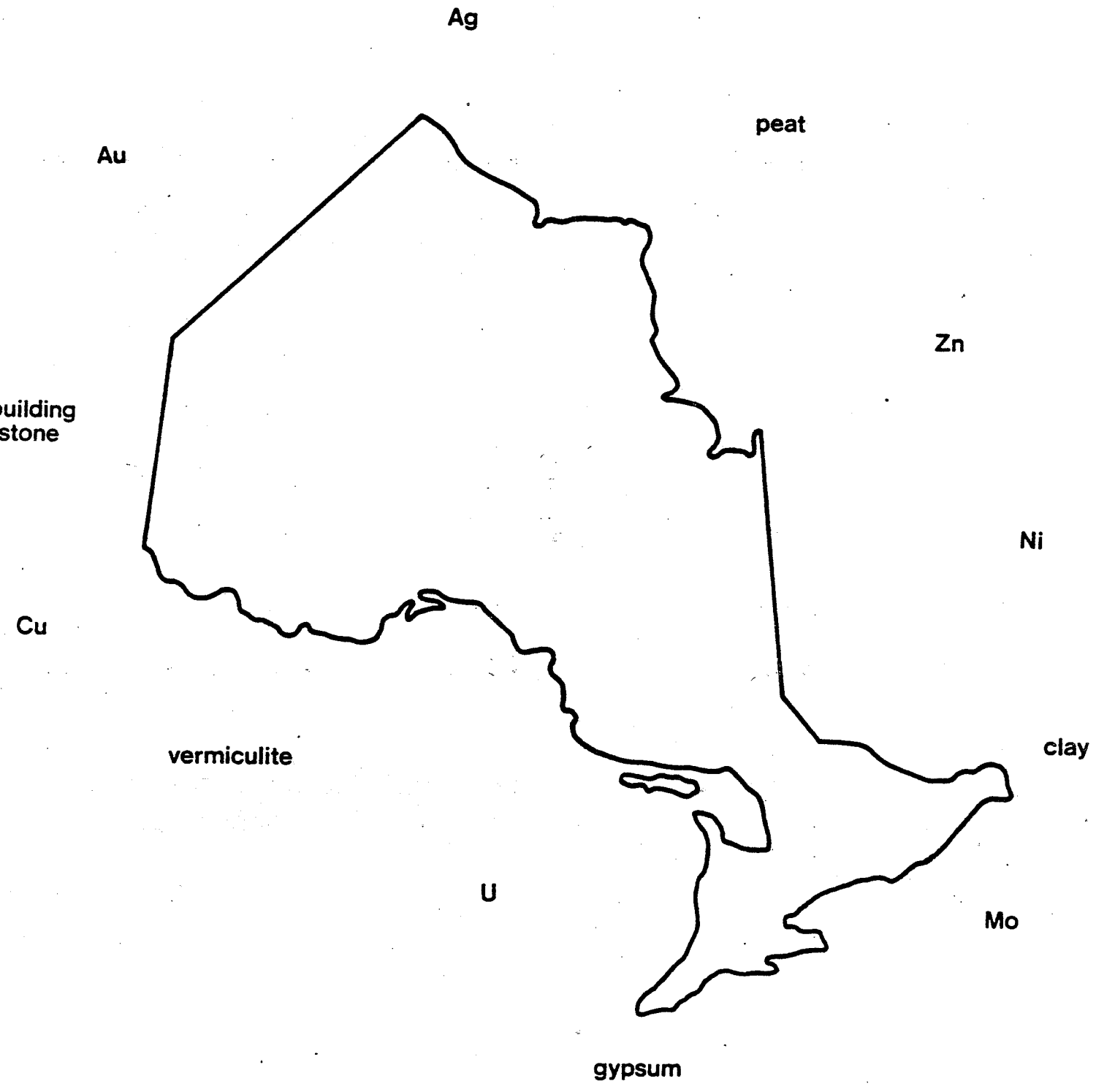
Late Precambrian and Paleozoic rocks
GRENVILLE PROVINCE
SOUTHERN PROVINCE
SUPERIOR PROVINCE
granitic rocks
metavolcanic rocks

1. *Jogran porphyry*
2. *Tribag Breccias (East, West, Breton, and South Breccias)*
3. *Palmer Township Breccia*
4. *Kirby-Legge*
5. *Kerr-Scott*
6. *Nystedt*
7. *Jardun Mines*
8. *Gimby*
9. *2-Horse Lake*
10. *minor copper occurrence in Gowganda Formation*
11. *Desbarats*
12. *Steinberg*
13. *Bald Dome*
14. *Gould Copper Mine*
15. *Montgomery Township occurrences*
16. *Crownbridge*
17. *White River Lead Prospect*
18. *Stag Lake*
19. *Pater Mine*
20. *East Pecors*
21. *East Bull Lake*
22. *Hermina Mine*
23. *Massey Mine*
24. *Alexander and Bishop occurrences*
25. *Falconbridge and Noranda Shakespeare prospects*
26. *Spanish River Mines*
27. *Mongowin Pluton*
28. *Foster Township W Prospect*
29. *Stralak*
30. *Hart Township skarn deposit*
31. *Hess Township magnetite occurrence*
32. *Lake Geneva Mine*
33. *Prace Mine*

Figure 46.1. Locations of deposits and occurrences referred to in text and simplified geology of study area (after Card, 1978).

[1]Department of Geological Sciences, Queen's University, Kingston, Ontario K7L 3N6

ONTARIO'S MINERAL DEPOSIT INVENTORY DATABASE



Ministry of Natural Resources

Hon. Michael Harris
Minister

Mary Mogford
Deputy Minister

ONTARIO'S MINERAL DEPOSIT INVENTORY DATABASE

The MINERAL DEPOSIT INVENTORY (MDI) is a computerized inventory of some 5,550 Ontario metallic and industrial mineral deposits.

MDI entries emphasize location, commodities, status and major references. Retrievals may be made by any combination of

- DEPOSIT NAME (OR ALTERNATE NAME)
- LOCATION
  - NTS unit
  - DISTRICT
  - TOWNSHIP
  - LATITUDE AND LONGITUDE
- MAJOR AND MINOR COMMODITIES
- DEVELOPMENT STATUS

Also included in the database are map and report references.

The complete deposit inventory in microfiche format was released in December 1984 as Ontario Geological Survey Open File Report 5470 for $20. Its four parts provide access to the information on each deposit by name, NTS, township and commodity.

The 5,550 MDI computer records contain skeleton information that has been extracted from the manual Mineral Deposit Files. These files include further information on geology and development. Both the manual and computer files are updated frequently.

Computer searches will be made on request. For further information on our services, give us a call:

GEOSCIENCE DATA CENTRE
ONTARIO GEOLOGICAL SURVEY
MINISTRY OF NATURAL RESOURCES
ROOM 819 - 77 GRENVILLE STREET
TORONTO, ONTARIO M5S 1B3
TELEPHONE: (416) 965-6139

See the attached sheets for

- database items
- typical entries showing the microfiche format used for the name and commodity indexes in OFR 5470
- statistics on commodities referenced in the database

March 1985

MINERAL DEPOSIT INVENTORY (MDI/SMDR)

Database Items Recorded

MDI Items - for all deposits:

Code	Description
C 1	MDIR NUMBER
C 2	SMDR NUMBER
C 3	DEPOSIT NAME
C 4	ENTITY CODED
C 5	POINT LOCATED
C 6	HOW LOCATED
C 7	MAP REFERENCE
C 8	MAP SCALE CODE
C 9	MAP SCALE
C10	DISTRICT CODE
C11	DISTRICT
C12	NTS
C13	TOWNSHIP
C14	LATITUDE
C15	LONGITUDE
C16	UTM ZONE
C17	NORTHING
C18	EASTING
C19	DEPOSIT STATUS CODE
C20	DEPOSIT STATUS
C23	RECORD DATE
C25	MINING AREA
C30	COMMODITIES
C301	COMMODITY
C302	QUALIFIER
C303	STATUS CODE
C304	STATUS
C31	ALTERNATE NAMES
C311	ALTERNATE NAME
C32	REFERENCES
C321	REFERENCE
C33	NTS EXTENSIONS
C331	NTS EXTENSION
C34	TOWNSHIP EXTENSIONS
C341	TOWNSHIP EXTENSION

SMDR additional items for some gold and uranium deposits:

Code	Description
C35	GEOLOGICAL PROVINCE
C351	GEOL PROVINCE CODE
C352	GEOL PROVINCE
C36	RESERVES & PRODUCTION
C361	DEPTH OF WORKINGS
C362	MILL CAPACITY
C363	MINING METHOD CODE
C364	MINING METHOD
C365	RESERVES CATEGORY CODE
C366	RESERVES CATEGORY
C37	MINERALS
C371	ORE MINERAL
C38	LITHOLOGY & STRATIGRAPHY
C380	ROCK CLASS CODE
C381	ROCK CLASS
C382	ROCK GROUP
C383	ROCK NAME
C384	ERA CODE
C385	ERA
C386	SUPERGROUP
C387	GROUP
C388	FORMATION
C389	RELATION TO DEPOSIT
C39	CONTIGUOUS DEPOSITS
C391	CONTIGUOUS DEPOSIT
C392	CONTIGUOUS SMDR#
C40	COMMENTARY
C401	DATA ITEM
C402	COMMENTS

Categories for Deposit/Commodity Status

Producer
Developed Prospect
Past Producer & Reserves
Past Producer
Raw Prospect
Occurrence
Possible Byproduct
Unknown

Those items which are indented can be entered more than once for a deposit.

March 1985

ALGOMA GALENA

**deposit name: ALGOMA GALENA mdi #: A 0114 record date: SEPT. 25, 1980
reference point location: ALGOMA nts : 41K/09NE township: DEROCHE
lat: 46 43 35 long: 84 11 56 utm zone: 16 northing: 5178352 easting: 714042

entity coded : SIMPLE
point located : GN,SP TRIANGULAR SYMB AT MORE E PROP SYMB 15 0.75 MI N OF ACR
map reference : OGS 1975, P1064 JARVIS LAKE - GARDEN RIVER AREA map scale: B how located: PRECISE
deposit status: RAW PROSPECT

commodities:			
ZN	MAJOR	RAW PROSPECT	
PB	MAJOR	RAW PROSPECT	
AG	MAJOR	RAW PROSPECT	
CU	MINOR	OCCURRENCE	
AU	MINOR	OCCURRENCE	

references: OGS 1940, AR VOL 49 PT 1, P223
OGS 1969, MRC 12, P21-22
NMI FILE, 41K/09 PB 2
SMDR FILE, #00467

alt. names: KIRBY-LEGGE
KERR-SCOTT

ALGOMA STEEL (alternate name)

**deposit name: NORTHERN CANADA mdi #: TB0401 record date: JAN. 31, 1984
reference point location: THUNDER BAY nts : 52J/07NE township: POISSON
lat: 50 25 19 long: 90 30 21 utm zone: 15 northing: 5588305 easting: 677164
deposit extends into: nts : 52J/08NW

entity coded : SIMPLE
point located : PITS LOCATED SE PORTION OF ONE PINE L & 200 M E OF AU SYMBOL
map reference : OGS 1976, MAP2357 MCCUBBIN,POISSON & MCGILLIS TP map scale: C how located: PRECISE
deposit status: RAW PROSPECT

commodities:			
AU	MAJOR	RAW PROSPECT	
FE	MINOR	OCCURRENCE	

references: OGS 1977, GR 160, P63-66+MAP2357
AFRO 1982, #2.5039

alt. names: ALGOMA STEEL

Typical Fiche Frame from Deposit Name Index, OFR 5470
The same format is used for NTS and township indexes.

COMMODITIES INDEX ENTRY/OTHER	COMMODITY STATUS	DISTRICT	TOWNSHIP	NTS	DEPOSIT NAME	MDI #
*AU	OCCURRENCE	COCHRANE	COULSON	42A/09NW	FALLS	C 0131
*AU	OCCURRENCE	COCHRANE	CURRIE	42A/07NE	REID, S.	C 0290
*AU	OCCURRENCE	COCHRANE	CURRIE	42A/10SE	ANDERSON, J.	C 0291
AU	OCCURRENCE	COCHRANE	CURRIE	42A/10SE	CURRIE	C 0283
*CU	"					
ZN	"					
PB	"					
AG	"					
*AU	RAW PROSPECT	COCHRANE	DELORO	42A/06NE	CONCORDIA	C 0332
AG	"					
CU	OCCURRENCE					
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NE	POWELL	C 0343
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NE	MASCIOLI, D.J.	C 0339
*AU	PAST PRODUCER*RES	COCHRANE	DELORO	42A/06NW	AUNOR	C 0368
AG	"					
W	PAST PRODUCER					
*AU	PAST PRODUCER	COCHRANE	DELORO	42A/06NW	FAYMAR	C 0358
*AG	"					
ASBESTOS	OCCURRENCE					
*AU	PAST PRODUCER	COCHRANE	DELORO	42A/06NW	CINCINNATI	C 0357
AG	"					
*AU	PAST PRODUCER*RES	COCHRANE	DELORO	42A/06NW	DELNITE	C 0275
AG	"					
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NW	CLUCAS BOOKER	C 0334
PB	"					
TALC	"					
SOAPSTONE	"					
*AU	PAST PRODUCER	COCHRANE	DELORO	42A/06NW	ANKERITE (MARCH)	C 0336
AG	"					
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NW	NOVACK	C 0342
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NW	JASPER	C 0337
*AU	PAST PRODUCER*RES	COCHRANE	DELORO	42A/06NW	ANKERITE	C 0331
AG	"					
*AU	PAST PRODUCER	COCHRANE	DELORO	42A/06NW	MCLAREN-PORCUPINE	C 0341
AG	"					
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NW	MCBINE-PORCUPINE	C 0340
*AU	OCCURRENCE	COCHRANE	DELORO	42A/06NW	DELNAUR	C 0335
*AU	RAW PROSPECT	COCHRANE	DELORO	42A/06NW	DAYTON	C 0333
FE	OCCURRENCE					
*AU	RAW PROSPECT	COCHRANE	DELORO	42A/06NW	JODELO	C 0338
AU	OCCURRENCE	COCHRANE	DELORO	42A/06SW	CANADIAN MAGNESITE	C 0324
*MG	DEVELOPED PROSPECT					
*TALC	"					
ASBESTOS	OCCURRENCE					
NI	"					
*AU	RAW PROSPECT	COCHRANE	DENTON	42A/05SE	JOWSEY-DENTON	C 0378
AG	"					
CU	OCCURRENCE					
*AU	DEVELOPED PROSPECT	COCHRANE	DENTON	42A/05SE	AUMO	C 0004
AG	"					
CU	"					
MO	OCCURRENCE					

TABLE 1 | COMMODITIES REFERENCED IN THE MINERAL DEPOSIT INVENTORY, OFR 5470
December 1984

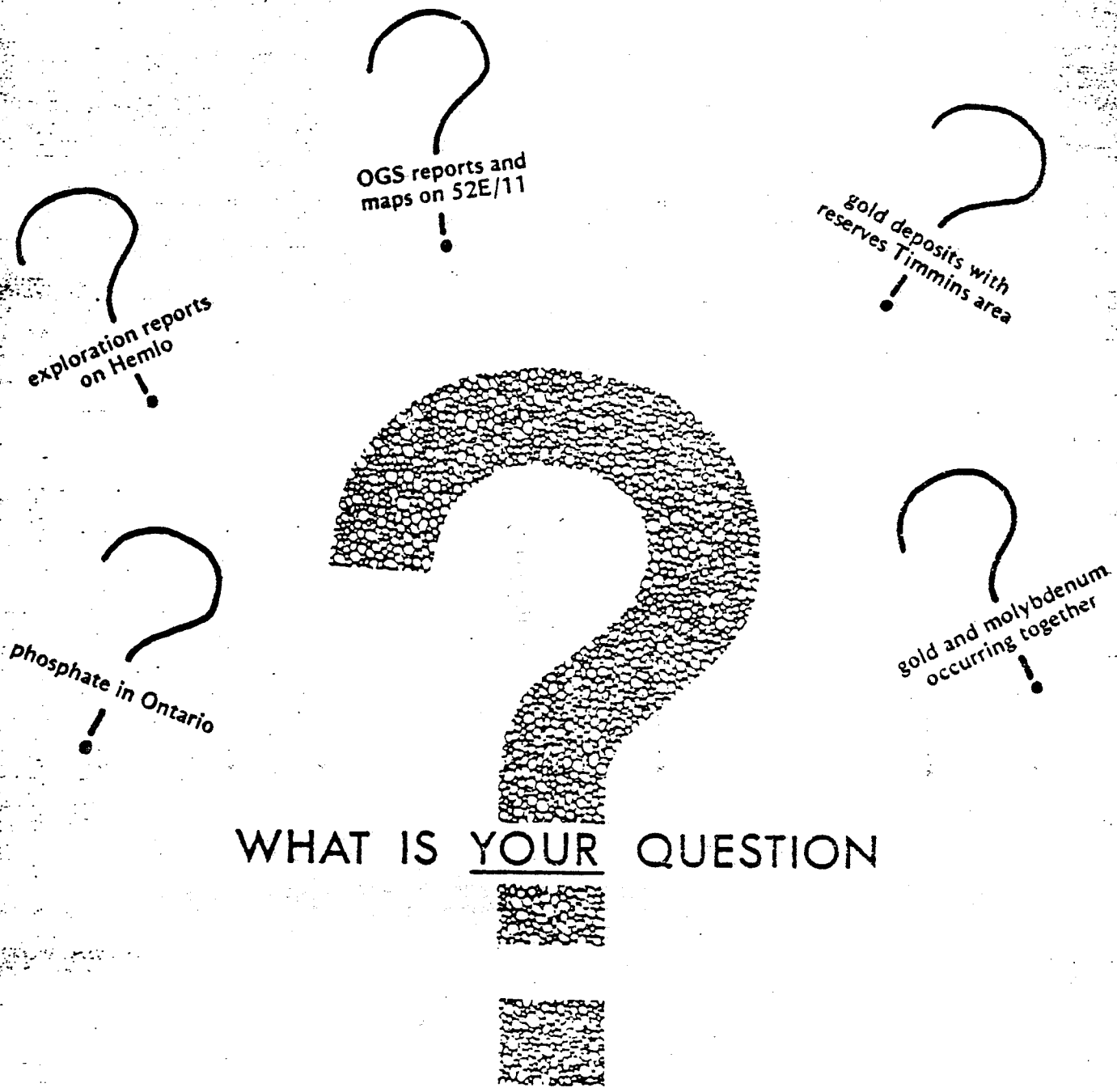
Frequency	Commodity		Recording Format
2	actinolite		ACTINOLITE
	allanite	see	CE
1	aluminum		AL
	amethyst	see	GEM-AMETHYST
	anorthosite	see	STONE-ANORTH
1	anthraxolite		ANTHRAXOLITE
24	antimony		SB
	apatite	see	PHOSPHATE
28	arsenic		AS
51	asbestos		ASBESTOS
79	barite		BARITE
	basalt	see	STONE-BASALT
2	bentonite		BENTONITE
17	beryllium		BE
53	bismuth		BI
	brucite	see	MG
12	cadmium		CD
33	calcite		CALCITE
28	cerium		CE; see also REE
2	cesium		CS
9	chromium		CR
96	clay		CLAY
364	cobalt		CO
	columbium	see	NB
1,592	copper		CU
22	corundum		CORUNDUM; see also GEM-CORUNDUM
22	diatomite		DIATOMITE
12	dolomite		DOLOMITE-CHEM (as chemical, flux)
	"	see	STONE-DOLOMT (as stone)
	"	see	MG (as source of magnesium)
2	dysprosium		DY; see also REE
	erbium	see	REE
1	europium		EU; see also REE
168	feldspar		FELDSPAR; see also GEM-FELDSPAR
66	fluorite		FLUORITE
	gabbro	see	stone-GABBRO
4	gadolinium		GD; see also REE
41	garnet		GARNET; see also GEM-GARNET
9	gem-amethyst		GEM-AMETHYST
1	gem-corundum		GEM-CORUNDUM
1	gem feldspar		GEM-FELDSPAR
3	gem-garnet		GEM-GARNET
3	gem-sodalite		GEM-SODALITE
3	gem-zircon		GEM-ZIRCON
	gneiss	see	STONE-GNEISS
1,942	gold		AU
	granite	see	STONE-GRANITE
65	graphite		GRAPHITE
18	gypsum		GYPSUM

	holmium	see	REE
1	indium		IN
13	iridium		IR; see also PT METALS
449	iron		FE
7	kyanite		KYANITE
9	lanthanum		LA; see also REE
475	lead		PB
4	lignite		LIGNITE
62	limestone		LIMESTN-CHEM (as chemical flux)
	"	see	STONE-LIMESTN (as stone)
45	lithium		LI
	lutecium	see	REE
	magnesite	see	MG
10	magnesium		MG
10	manganese		MN
138	marble		MARBLE-CHEM (as chemical, filler)
	"	see	STONE-MARBLE (as stone)
	"	see	MG (as source of magnesium)
71	marl		MARL
9	mercury		HG
168	mica		MICA
290	molybdenum		MO
5	neodymium		ND; see also REE
33	nepheline syenite		NEPH SYENITE
587	nickel		NI
89	niobium		NB
1	ochre		OCHRE
	osmium	see	PT METALS
43	palladium		PD; see also PT METALS
62	peat		PEAT
96	phosphate		PHOSPHATE
43	platinum		PT; see also PT METALS
22	platinum metals		PT METALS; see also individual elements
1	praseodymium		PR; see also REE
	pyrite	see	SULPHR/PYRITE; S
	quartz	see	SILICA
	quartzite	see	STONE-QUARTZT; SILICA
8	rare earth elements		REE; see also individual elements
13	rhodium		RH; see also PT METALS
	rhyolite	see	STONE-RHYOLT
1	rubidium		RB
12	ruthenium		RU; see also PT METALS
25	salt		SALT
	samarium	see	REE
	sandstone	see	SILICA; STONE-SANDSTN
2	scandium		SC; see also REE
22	selenium		SE
18	shale		SHALE
62	silica		SILICA
5	sillimanite		SILLIMANITE
1,159	silver		AG
	slate	see	STONE-SLATE
6	soapstone		SOAPSTONE
	sodalite	see	GEM-SODALITE

1	stone-anorthosite		STONE-ANORTH
1	stone-basalt		STONE-BASALT
28	stone-dolomite		STONE-DOLOMT
3	stone-gabbro		STONE-GABBRO
6	stone-gneiss		STONE-GNEISS
24	stone-granite		STONE-GRANITE
38	stone-limestone		STONE-LIMESTN
48	stone-marble		STONE-MARBLE
2	stone-miscellaneous		STONE-MISC
3	stone-quartzite		STONE-QUARTZT
2	stone-rhyolite		STONE-RHYOLT
45	stone-sandstone		STONE-SANDSTN
2	stone-slate		STONE-SLATE
2	stone-trap rock		STONE-TRAP RK
16	strontium		SR
92	sulphur		SULPHR/PYRITE; also listed as S
16	tantalum		TA
40	talc		TALC; see also SOAPSTONE
10	tellurium		TE
	terbium	see	REE
258	thorium		TH
	thulium	see	REE
9	tin		SN
31	titanium		TI
10	tourmaline		TOURMALINE
3	tremolite		TREMOLITE
	trap rock	see	STONE-TRAP RK
38	tungsten		W
600	uranium		U
14	vanadium		V
8	vermiculite		VERMICULITE
5	ytterbium		YB; see also REE
12	yttrium		Y; see also REE
602	zinc		ZN
21	zircon, zirconium		ZR; see also GEM-ZIRCON

10,843 commodities listed in 5,554 deposits

ARE YOU ACCESSING ALL INFORMATION SOURCES?



Ontario
Ministry of Natural Resources
Hon. Alan W. Pope
Minister
John R. Sloan
Deputy Minister

SUMMARY OF INFORMATION SOURCES

GUIDES YOU CAN USE AT YOUR OFFICE

	access criteria
• Index to Published Reports and Maps	*NTS, township, author, district*
• General Index	*company name, location, rock type, etc.*
• Index to Data in Exploration Reports	*commodity, company name, township, NTS, etc.*
• Geological Data Inventory Folios	*township, claim map area*
• Geoscience Data File Indexes	*company and township names, NTS*
• Mineral Deposit Inventory	*deposit name, NTS, township, commodity*
• Indexes to Maps	*map type and area*

FILES YOU CAN USE AT OUR OFFICE

• Exploration Reports	*township or claim map area*
• Mineral Deposit Files	*location, deposit name, company name*

LET OUR COMPUTER FIND IT FOR YOU

- Publications
- Exploration Reports
- Mineral Deposits
- Rock Chemical Analyses

} *your choice!*

For additional information see attached sheets or contact us:

Geoscience Data Centre
Ontario Geological Survey
Room 819 - 77 Grenville Street
Toronto, Ontario M5S 1B3
Telephone: (416) 965-6139

December 1984

GUIDES YOU CAN USE AT YOUR OFFICE

INDEX TO PUBLISHED REPORTS AND MAPS

Publications listed by township, NTS district and author.
Updated by annual supplements. Published as Miscellaneous Paper MP 77.

GENERAL INDEX

9 comprehensive keyword indexes to published reports covering the period 1891 - 1980. Volume 8 (1966 - 1975) and Volume 9 (1976 - 1980) were released in 1984.

INDEX TO DATA IN EXPLORATION REPORTS

Microfiche index to data reported by the mining industry. Report titles listed by geological keywords, company name, township and NTS quadrangle. Issued periodically as Open File Report OFR 5333.

GEOLOGICAL DATA INVENTORY FOLIOS

Regional office compilations of references and exploration data by claim map areas. These replace the data series maps.

GEOSCIENCE DATA FILE INDEXES

Microfiche indexes to exploration reports accessible by township, NTS, company name and claim map area. Available for the areas covered by the Sault Ste. Marie and Sudbury Resident Geologists' offices.

MINERAL DEPOSIT INVENTORY

✓ Microfiche index to Ontario deposits listed by deposit name, NTS quadrangle, township and commodity. Now available as Open File Report 5470.

INDEXES TO MAPS

Index maps showing area coverage of published preliminary and coloured maps, with map number, name, scale and date. Index maps are free.

ORDER FROM

Public Service Centre
Ministry of Natural Resources
Room 1640, Whitney Block
Toronto, Ontario M7A 1W3
Telephone: (416) 965-1348

ORDER GEOSCIENCE DATA FILE INDEXES FROM

Micropublishing Services Canada Ltd.
1361 Huntingwood Drive, Unit 8
Agincourt, Ontario M1S 3J1
Telephone: (416) 292-0900
Attention: Mr. Ivo Maider

December 1984

FILES YOU CAN USE AT OUR OFFICE

EXPLORATION REPORTS

The Geoscience Data Centre has 20,000 reports on Ontario surveys and drilling submitted by the mining industry since the late 1940's. These files include geological, geophysical, geochemical and drill core log reports. Access to these reports is by township or claim map area.

The Geoscience Data File microfiche system amalgamates the Toronto collection of exploration reports with those reports filed in the Resident Geologists' offices. The system consists of:

- Township/Area, NTS and Company/Author Indexes
- Index Plans by township or NTS area showing location of exploration work, and identify company, and type and year of exploration
- exploration reports with accompanying maps

Note: The microfiche format is less expensive than paper copies of the exploration reports and maps. Therefore, it is feasible for companies and individuals to use this exploration information in their office.

Microfiche are now available for the Sault Ste. Marie and Sudbury Resident Geologists' areas.

Order microfiche from:

Micropublishing Services Canada Ltd.
1361 Huntingwood Drive, Unit 8
Agincourt, Ontario M1S 3J1
Telephone: (416) 292-0900
Attention: Mr. Ivo Maider

MINERAL DEPOSIT FILES

The Geoscience Data Centre has files on 7,000 metallic and industrial mineral deposits of Ontario. These files contain information on geology, mineralization, development and ownership, with copies of major references.

For further information give us a call at:

Geoscience Data Centre
Ontario Geological Survey
Room 819 - 77 Grenville Street
Toronto, Ontario M5S 1B3
Telephone: (416) 965-6139

Dec. '83

COMPUTER SEARCH: PUBLICATIONS AND EXPLORATION REPORTS

The ONTARIO GEOSCIENCE DATA INDEX provides easy access to

- 6,700 reports and maps produced by the Ontario Geological Survey and the Mineral Resources Branch from 1891 to the present.
- 9,400 exploration reports from the mining industry. These include geological, geophysical and geochemical surveys.

Report and map titles may be retrieved by:

- township or claim map name
- NTS unit
- commodity
- type of exploration survey
- geological features, rock types, formation names, etc.
- author/company name
- year
- publication type (e.g. map, report)

Computer searches will be made on request. For further information and cost, give us a call:

Geoscience Data Centre
Ontario Geological Survey
Room 819 - 77 Grenville Street
Toronto, Ontario M5S 1B3
Telephone: (416) 965-6139

December 1984

See reverse side for sample retrieva

SAMPLE RETRIEVALS FROM THE ONTARIO GEOSCIENCE DATA INDEX FILE

ASSESSMENT REPORTS BY GETTY MINES ON WORK DONE IN NTS 41 DURING 1975-1980

• 1977 GETTY MNG NORTHEAST L; NATAL; KNIGHT; MACMURCHY; TYRRELL TPS; NTS 41P/11; SUDBURY-TIMISKAMING
• DISTS, ONT; 67 CLS, MAG, E M; GEOCHEM REPTS; 28 MAPS; OGS ASSESSMENT LIBRARY FILE 2-2374, TOR 1977
• 1976 GETTY MNG NORTHEAST L; NATAL; MACMURCHY; KNIGHT; TYRRELL TPS, NTS 41P/11; SUDBURY-TIMISKAMING
• DIST, ONT; 55 CLS, GEOL REPT; 8 MAPS, ODM ASSESSMENT LIBRARY FILE 2-2121, TORONTO 1976

ASSESSMENT REPORTS WITH DATA ON GOLD AND ARSENIC GEOCHEMISTRY

• 1982 NEMMONI EXPL OF CAN L, BURROWS TP, NTS 41P/15SW, SUDBURY DIST, ONT, 29 CLS, MAG, E M, GEOCHEM;
• GEOL REPT; 12 MAPS, BY H P HUHEN, M LIMON; H O KARVINEN, OGS ASM LIB FILE 2-4647, TORONTO 1982
• 1981 D H PYKE, GERMAN TOWNSHIP, NTS 42A/10SW, COCHRANE DISTRICT, ONTARIO, 4 CLAIMS, GEOCHEM REPT; 3
• MAPS, ONTARIO GEOLOGICAL SURVEY ASSESSMENT LIBRARY FILE 2-3899, TORONTO 1981

OGS REPORTS CONTAINING DATA ON GROUND GRAVITY SURVEYS

• 1983 GRANT NO, 1991 INTERPRETATION OF GRAVITY DATA FROM NEW LISKEARD, NTS 31M/W; 41P/E; ONTARIO; BY
• L MANSINHA; D A WILKINSON, ONTARIO GEOLOGICAL SURVEY OPEN FILE REPORT 5440, TORONTO 1983
• 1982 SUMMARY OF FIELD WORK, 1982, BY THE ONTARIO GEOLOGICAL SURVEY, EDITED BY J WOOD; O L WHITE,
• R B BARLOW AND A C COLVINE, ONTARIO GEOLOGICAL SURVEY MISCELLANEOUS PAPER 106, TORONTO 1982

GOLD IN TAILINGS

• 1980 E N DAVIS, SUMMENS; MCCUMBER TPS, NTS 52E/12SW, THUNDER BAY DIST, ONT, 12 CLS, GEOCHEM, 4 UN AND
• SAMPLE ASSAY REPTS; 2 MAPS, BY W J MIDDELL, OGS ASSESSMENT LIBRARY FILE 63-3814, TORONTO 1980
• 2 IN=400FT GEOCHEM MAPS SHOWING SAMPLE LOCATIONS AND ANALYTICAL RESULTS IN PPB FOR GOLD; 4 DH T
• DIAL FOOTAGE 975FT, LOGS; MINE DUMP WAS SAMPLED AND ASSAYED
• GEOCHEMICAL SURVEY OUTLINED 7 ANOMALOUS AREAS; DRILLING DID NOT INTERSECT ANY THING OF ECONOMIC
• SIGNIFICANCE; THE DUMP OF THE NORTHERN EMPIRE MINE IN THE PROPERTY HAS A TONNAGE OF 207950 TONS
• AT AN AVERAGE WEIGHTED GRADE OF 0.05% OZ AU/TON

OGS REPORTS CONTAINING POLLEN DIAGRAMS

• 1983 QUATERNARY GEOLOGY OF THE HAMILTON-CAMBRIDGE AREA; NTS 30M/5;40P/8; SOUTHERN ONTARIO; BY
• P F KARROW, ONTARIO GEOLOGICAL SURVEY OPEN FILE REPORT 5429, TORONTO 1983; WITH MAPS P-2604-2605
• 1982 QUATERNARY GEOLOGY OF THE TILLSONBURG AREA; NTS 40I/15; SOUTHERN ONTARIO; BY P J BARNETT,
• ONTARIO GEOLOGICAL SURVEY REPORT 220, TORONTO 1982, WITH MAP 2473

OGS REPORTS CONTAINING DATA ON PREHNITE-PUMPELLYITE FACIES

• 1978 GEOLOGY OF THACKERAY; ELLIOTT; TANNAHILL; DOKIS TPS; NTS 32D/5;42A/8; COCHRANE DISTRICT, ONTARIO;
• BY L S JENSEN; ONTARIO GEOLOGICAL SURVEY REPORT 165, TORONTO 1978, WITH COLMAPS 2367-2368
• 1978 GEOLOGY OF STOUGHTON AND MARRIOTT TOWNSHIPS, NTS 32D/5NW,32D/12SW; COCHRANE DISTRICT, ONTARIO,
• BY L S JENSEN; ONTARIO GEOLOGICAL SURVEY REPORT 173, TORONTO 1978, WITH COLMAP 2390

COMPUTER SEARCH: MINERAL DEPOSITS

The MINERAL DEPOSIT INVENTORY (MDI) database is an inventory of some 5,500 Ontario metallic and industrial mineral deposits.

MDI entries emphasize location, commodities, status and major references. Retrievals may be made by:

- Deposit name (alternate name)
- NTS unit
- district
- township
- latitude and longitude
- major and minor commodities
- deposit status

Also included in the database are map and report references.

The complete deposit inventory is also available on microfiche as Open File Report 5470. Its four parts provide access to the information on each deposit by name, NTS, township and commodity.

The 5,500 MDI computer records are skeleton information that has been extracted from the manual Mineral Deposit Files. These files are available for follow-up examination.

Computer searches will be made on request. For further information and cost, give us a call:

Geoscience Data Centre
Ontario Geological Survey
Room 819 - 77 Grenville Street
Toronto, Ontario M5S 1B3
Telephone: (416) 965-6139

December 1984

See reverse side for sample MDI record

MINISTRY OF NATURAL RESOURCES
ONTARIO GEOLOGICAL SURVEY
GEOSCIENCE DATA CENTRE

MINERAL DEPOSIT
INVENTORY (MDI) RECORD

DEPOSIT NAME ORPIT

DISTRICT	COCHRANE	MDI #	C 0018	NTS EXTENSION	TOWNSHIP EXTENSION
NTS	42A/05NE	SMDR #	02371		
TOWNSHIP	BRISTOL	UTM ZONE	17		
LATITUDE	48° 23' 01"	NORTHING	5358864		
LONGITUDE	81° 33' 05"	EASTING	459173		

ENTITY CODED	COMPOUND
POINT LOCATED	SHAFT ON CLAIM P 4040 JUST S OF THUNDER CREEK IN SW PART OF TOWNSHIP
HOW LOCATED	PRECISE
MAP REFERENCE	OGS 1957, MAP 1957-7 BRISTOL TP IN AR VOL 35 PT 6
DEPOSIT STATUS	DEVELOPED PROSPECT

MAP SCALE A
RECORD DATE DEC 16, 1983

	COMMODITY	QUALIFIER	STATUS	COMMODITY	QUALIFIER	STATUS
1	AU	MAJOR	DEVELOPED PROSPECT			

REFERENCES

OGS 1926, AR VOL 35 PT 6, P20,29
OGS 1957, AR VOL 66 PT 7, P35-37
OGS 1971, MRC 13, P49-50
AFRO 1973, #63.3073
NMI FILE, 42A/05 AU 24

ALTERNATE NAMES

MCAULEY-BRYDGE
STANWELL

LEGEND

ENTITY CODED

SIMPLE - A single body of mineralization; includes all occurrences and raw prospects.
COMPOUND - More than one body of mineralization.
PARTIAL - A single body of mineralization under two or more managements and thus split into two or more records.

HOW LOCATED

PRECISE - A clearly defined point at the deposit on published map showing latitudes and longitudes.
TRANSFER - Same as above but map lacks latitudes and longitudes; either geographic grid or point was transferred from or to another map respectively.
GENERAL - Point not at the deposit or location inferred from written or verbal descriptions.

MAP SCALE

CODE	RANGE (Map Scale)	IMPERIAL SCALE
A	≤12,000	1000 FT (12,000)
B	>12,000 ≤ 25,000	1/4 MI (15,840)
C	>25,000 ≤ 50,000	1/2 MI (31,680)
D	>50,000 ≤ 100,000	1 MI (63,360)
E	>100,000 ≤ 125,000	
F	>125,000 ≤ 150,000	2 MI (126,720)
J	>150,000 ≤ 200,000	
H	>200,000 ≤ 250,000	
I	>250,000 ≤ 300,000	4 MI (253,440)
J	>300,000 ≤ 500,000	
K	>500,000	

COMPUTER SEARCH: ROCK CHEMICAL ANALYSES

The PETROCH database contains rock chemical data of some 17,000 samples, mostly Precambrian, collected by OGS geologists.

Retrievals may be made by:

- township or claim map name
- NTS unit
- latitude and longitude
- major oxides values
- trace elements values
- project number
- geologist name

Also included in the database are field rock name and type of material, e.g. intrusive.

For information on retrieval of chemical data, give us a call:

Geoscience Data Centre
Ontario Geological Survey
Room 805 - 77 Grenville Street
Toronto, Ontario M5S 1B3
Telephone: (416) 965-4641

Ontario Ministry of Natural Resources
Hon. Michael Harris, Minister
Mary Mogford, Deputy Minister

OGS OPEN FILE REPORT

OFR 5333 Index to Geoscience Data recorded in Exploration Reports submitted by the Mining Industry, Edition 1985; compiled by the Geoscience Data Centre, 5 pages, 6 figures, 26 microfiche.

This Open File Report is available for purchase only from the Public Information Centre $15.00

This index references geoscience data contained in exploration reports filed in the Geoscience Data Centre. It covers over 10,000 geological, geophysical and geochemical reports submitted by the mining industry since the mid 1940's to early 1984. Each report title entry includes information on owner/option holder, location, number of claims, type of survey performed and report year. This Open File Report consists of five parts to give the user access to report title by:

Geoscience Keyword	- Part 1, 10 microfiche
Company Name	- Part 2, 4 microfiche
Township	- Part 3, 3 microfiche
NTS	- Part 4, 3 microfiche
Report Number	- Part 5, 6 microfiche

On file at Mines Library, Toronto, and all Regional/Resident Geologists' Offices.

GEOSCIENCE DATA PROCESSING

(Computer Field Note System)

Ontario

Ministry of Natural Resources

Hon. Michael Harris
Minister

Mary Mogford
Deputy Minister

COMPUTER FIELD NOTE SYSTEM

A system has been developed which will permit data collected in the field to be recorded directly into microcomputers at base camp. The data can then be transferred onto an in-house minicomputer. The minicomputer is used to reorganize and process the field data as required by the user. This system will enable the user to build a database of geological information for archival and research purposes. Programs have been developed that aid in data retrieval and research.

For further information contact:

Elizabeth Ambrose
or Dan Wright
Precambrian Geology Section
Ontario Geological Survey
Ministry of Natural Resources
9th Floor, 77 Grenville Street
TORONTO, Ontario
M5S 1B3
Telephone: (416)965-2326

COMPUTER FIELD NOTE SYSTEM

1) Field Note Form

This format for recording field notes is very flexible and may be customized by the individual geologist. It combines free-format note taking with a category system that allows easy access to specific types of data. (see figure 1)

2) Note Entry

These note forms are entered into the portable computer. This process is aided by a simple to use data entry program. Once these notes are entered they may be permanently stored on cassette tapes.

3) Transferring To Main Computer

Data stored on the tapes and/or the portable computer can be transferred on to the main computer using a telephone modem. This can be done either while in the field or after returning to the office.

4) Information Retrieval

Field note data can be retrieved from the main computer using a data retrieval program. Information is retrieved according to the field name and category number. Printer listings may be obtained if desired. (see figure 2)

5) Plotting Structural Data

Structural data such as strike and dip or trend and plunge can be retrieved and plotted on a stereonet using a Hewlett Packard 7220C plotter. (see figures 3 and 4)

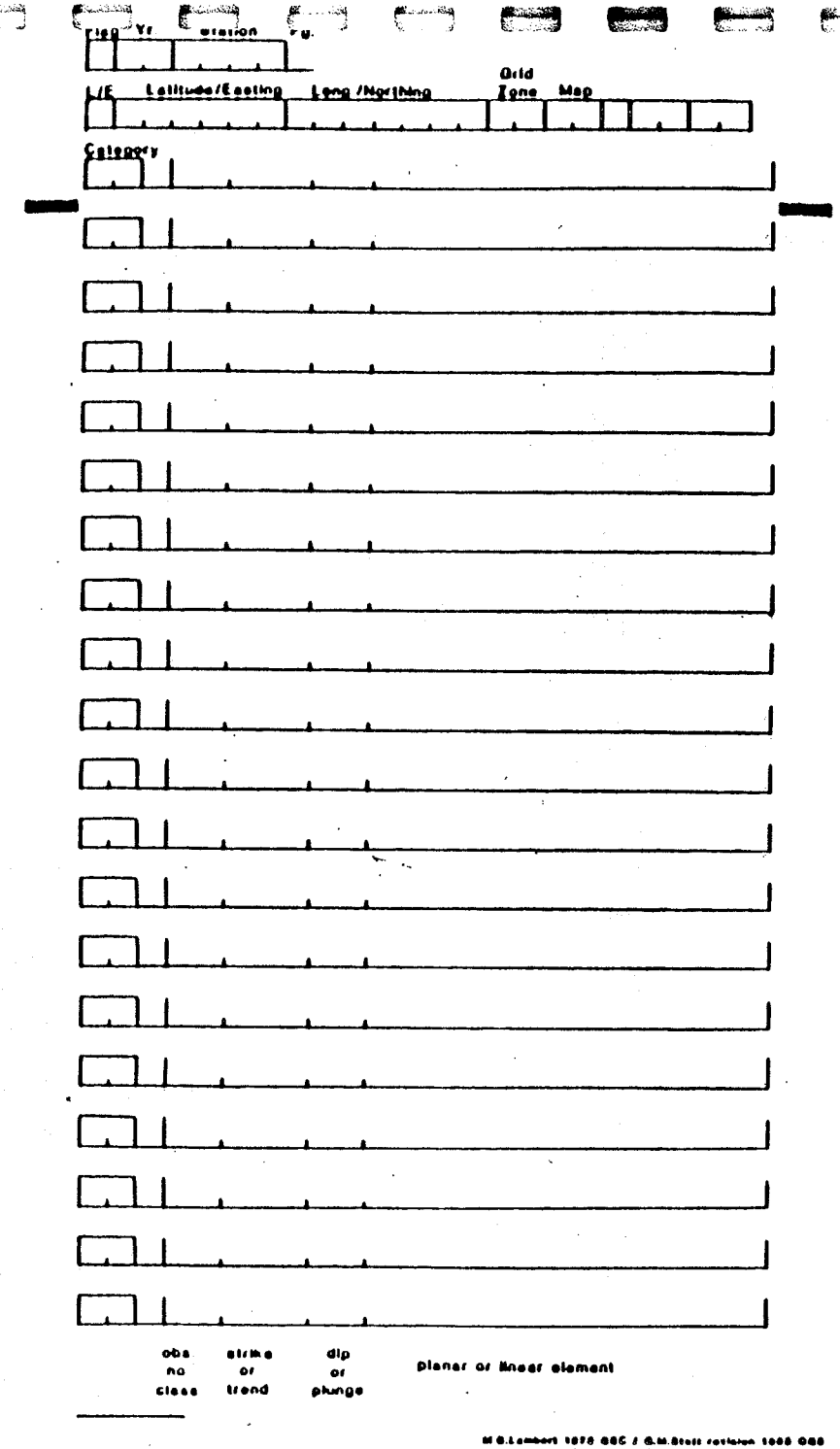


Figure 1

FILE: FLD84.TXT

Category number: 07 Felsic Volc.

STATION NUMBER: 0133
07 SILICEOUS TUFF WITH LAPILLI HP RICH FRAGMENTS REXTALLIZED

STATION NUMBER: 0135
07 FINELY CRENULATED TUFF WITH SHEARED MATRIX O/C CUT BY SMOKEY QRTZ VEIN

STATION NUMBER: 0148
07 BND TUFFS WITH INTERBEDDED CHERT-PY EXHALITE

STATION NUMBER: 0155
07 TUFF LAPILLI TUFF AND TUFF BRECCIA LARGE ROUNDED FRAGMENTS 30X7CM

STATION NUMBER: 0161
07 FRG REWORKED SERICITC TUFFS GREY/GREEN COLOUR FINELY BANDED

Figure 2

CATEGORY: 703
Mineral foliations
NO QUALIFIERS

STATION NUMBER	STRIKE	DIP
0243	324	85
0244	305	85
0245	308	90
0246	145	90
0247	330	80
0248	310	90
0249	126	78
0250	152	90
0251	132	90

Figure 3

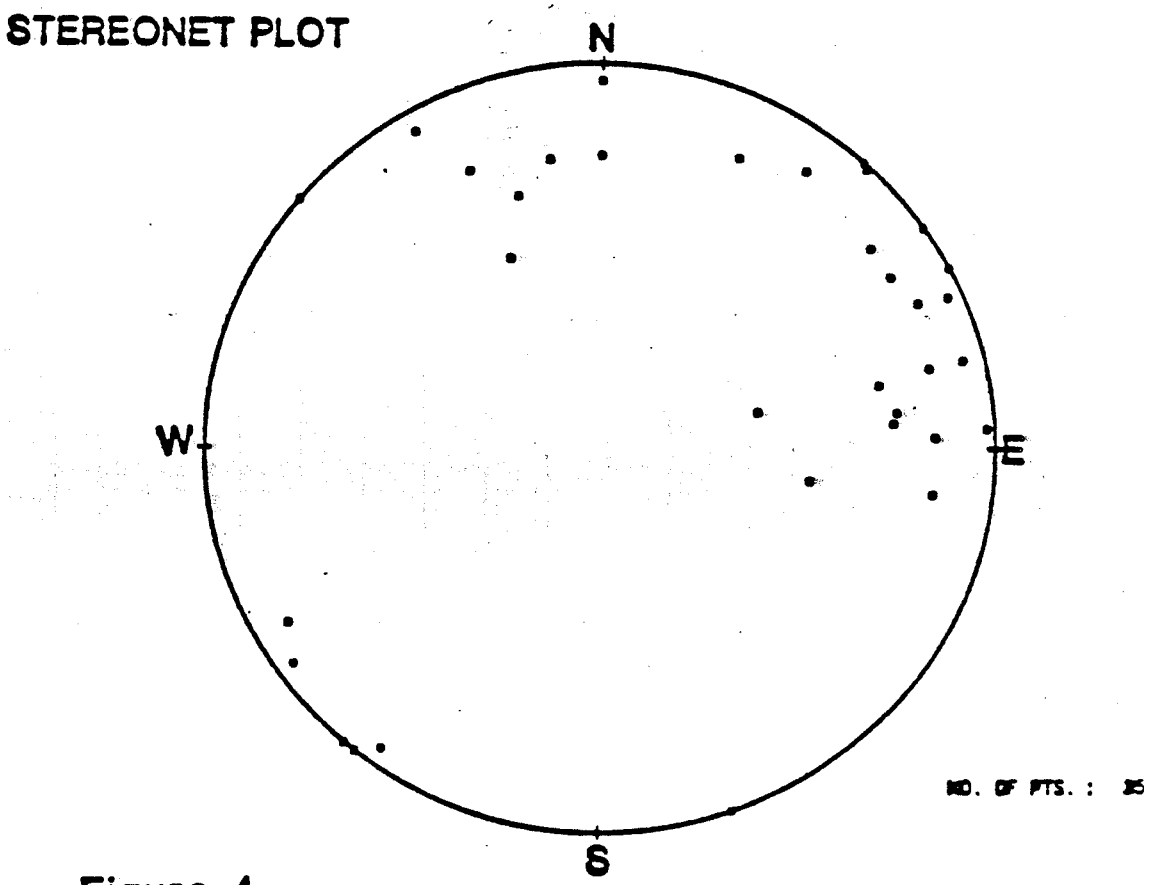


Figure 4

6.11

Geological Survey of Canada
MINERAL POLICY SECTOR

Commission géologique du Canada
SECTEUR POLITIQUE MINÉRALE

WORKSHOP/ATELIER

MINERAL INVENTORY DATA FILES

Royal York Hotel
Toronto

March 14, 1985
0900-1330 h

Canada

An Invitation

The Geological Survey of Canada and the Mineral Policy Sector, Department of Energy Mines and Resources invite you to participate in a Workshop on Mineral Inventory Data Files to be held in the Ballroom, Royal York Hotel, Toronto, March 14, 1985. The workshop is being convened in cooperation with the Prospectors and Developers Association and will commence the morning following the Association's Annual Meeting (March 10-13).

The Workshop was organized in response to suggestions from the mineral industry that there is a need for a public forum to discuss technical and policy aspects of modern computerized mineral data file systems in federal and provincial agencies, and the needs of industry as both a user and a contributor to such files.

There is no registration fee for the Workshop and the attendance and participation of all interested persons is welcome.

Organizing Committee

Chris Findlay GSC, Ottawa
Bob Shank MPS, Ottawa
Bob Cathro Archer, Cathro & Associates, Vancouver

Cordiale bienvenue

La Commission géologique du Canada et le Secteur de la politique minérale du ministère de l'Energie, des Mines et des Ressources, vous invite cordialement à participer à l'atelier sur le <<Mineral Inventory Data Files>> à la salle de bal de l'hôtel Royal York à Toronto, le 14 mars, 1985. La date de cet évènement a été choisie de telle sorte qu'il commence le lendemain de la fin de la réunion annuelle de l'Association des prospecteurs (10 au 13 mars).

Cet atelier a été organisé à la suite de suggestions de l'industrie minérale afin d'avoir un débat élargi sur différents aspects des techniques et des politiques des systèmes modernes de données minérales informatisées d'agences fédérales et provinciales et leur utilisation par l'industrie au niveau des usagers et des concepteurs de ces banques de données.

Veuillez noter que l'inscription est gratuite et que toute personne intéressée est cordialement bienvenue, c'est un débat qui se veut le plus ouvert possible.

Comité organisateur

Chris Findlay, Commission géologique du Canada, Ottawa
Bob Shank, Secteur de la politique minérale, Ottawa
Bob Cathro Archer, Cathro and Associates, Vancouver

General Chairman/*Président général*
C.G. Miller
Managing Director/*Directeur administrateur*
The Mining Association of Canada/*Association minière du Canada*

0900-0905	Chairman's opening remarks/ *Allocation d'accueil du président*	C.G. Miller
0905-0915	Introduction to the Workshop/ *Introduction à l'atelier*	P. Kavanagh, Chairman/*président*, Independent Industrial Advisory Committee on Earth Sciences
	Federal Government Mineral Data Files/ *Données minérales informatisées du gouvernement fédéral*	
0915-0935	National Mineral Inventory & MINSYS	R.J. Shank, Mineral Policy Sector/*Secteur de la politique minérale, EMR*
0935-0955	CANMINDEX	D.F. Garson, R.M. Laramée, Geological Survey of Canada/*Commission géologique du Canada*
	Provincial Government Mineral Data Files/ *Données minérales informatisées des gouvernements provinciaux*	
0955-1015	MINFILE: The British Columbia Computerized Mineral Inventory System	A.F. Wilcox, B.C. Ministry of Energy, Mines and Petroleum Resources
1015-1035	Mineral Inventory Data Bases in the N.S. Department of Mines	N.A. Lyttle, N.S. Department of Mines and Energy
1035-1055	The Newfoundland Mineral Occurrence System	C.F. O'Driscoll, Newfoundland Department of Mines and Energy
	Coffee/*Pause-café*	
	Corporate Mineral Data Files/ *Données minérales informatisées constituées en société*	
1110-1130	The Northern Cordillera Mineral Inventory	R.J. Cathro, Archer, Cathro & Associates
1130-1150	COMINCO's Experience in Preparing Mineral Data Files	M. Tilkov, Cominco Ltd.
1150-1200	**Break/*Pause***	
	Panel and General Discussion/ *Discussion de groupe et discussion générale*	
	Chairman/*Président*: A. Sutherland Brown, Consultant/*consultant*	
1200-1210	Introduction to Issues/ *Amorce à la discussion*	D.C. Findlay, Geological Survey of Canada/*Commission géologique du Canada*
1210-1240	Panel Member Statements/*Membres du groupe de discussion* A. Sutherland Brown J.A. Coope, Newmont Exploration of Canada Ltd. J. Garnett, N.S. Dept of Mines and Energy R.A. Price, Geological Survey of Canada/*Commission géologique du Canada* W.H. Sellmer, Canamax Resources Inc.	
1240-1330	**General Discussion/*Discussion générale***	

****

6.12 SELECTED REFERENCES - MINERAL DEPOSITS INVENTORY FILES

RE - 76-03971-B
TI - DATA CAPTURE IN THE CONSTRUCTION OF MINDEP'S COMPUTER-BASED, MINERAL DEPOSITS FILES
AU - MONTGOMERY, J. H.; SINCLAIR, A. J.; WYNNE-EDWARDS, H. R.; FOX, A. C. L.; GIROUX, G. H.
CO - CJESA
PU - CAN. J. EARTH SCI.
IM - APR 1975, VOL. 12, NO. 4, P.698-703, INCL. FRE SUMM., ILLUS.
KE - *BRITISH COLUMBIA; ECONOMIC GEOLOGY; *MINERAL RESOURCES; *AUTOMATIC DATA PROCESSING; DATA BANKS; DATA; CAPTURE; SYSTEMS; MINDEP; CANADA; COMPUTERS
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC

RE - 76-24232-B
TI - PRINCIPLES AND METHODS OF COMPILATION OF PUNCHED-CARD FILES STORING DATA ON DEPOSITS AND ORES OF CENTRAL ASIA/ PRINTSIPY I METODY SOSTAVLENIYA FAKTOGRAFICHESKOY PERFOKARTOTEKI MESTOROZHDENIY I RUDOPROYAVLENIY SREDNEJ AZII
AU - KOPAYEV, V. A.; AVAKOVA, N. V.; IVANOVA, A. A. (EDITOR); MIKHAYLOV, YU. (EDITOR); SHCHEGLOV, A. D. (EDITOR)
PU - PRINTSIPY I METODY SBORA INFORMATSII PO RUDNYM MESTOROZHDENIYAM; TEZISY DOKLADOV, MIN. GEOL., LENINGRAD, USSR (SUN)
IM - 1970, P.20-27, SUMMARY ONLY, ILLUS.
KE - *USSR; ECONOMIC GEOLOGY; *MINERAL RESOURCES; *AUTOMATIC DATA PROCESSING; CENTRAL ASIA; PUNCHED CARDS
SU - GR26
LA - (RUS) RUSSIAN
FO - (BOOK); (ANAL) ANALYTIC; (ABST) ABSTRACT

RE - 77-33164-B (77-35982-B)
TI - THE NATIONAL COAL-RESOURCES DATA SYSTEM OF THE U. S. GEOLOGICAL SURVEY
CO - CAPTURE, MANAGEMENT AND DISPLAY OF GEOLOGICAL DATA; WITH SPECIAL EMPHASIS ON ENERGY AND MINERAL RESOURCES, PARIS, FRANCE, NOV. 24-26, 1975
AU - CARTER, M. D.
OR - U. S. GEOL. SURV., RESTON, VA., USA
CO - GGEOD
PU - COMPUT. GEOSCI. (III)
IM - 1976, VOL. 2, NO. 3, P.331-340, 5 REFS., ILLUS., SKETCH MAPS
GE - N250000 N720000 W0660000 W1680000
KE - *UNITED STATES; ECONOMIC GEOLOGY; *COAL; REGIONAL; ALASKA; DEPOSITS; RESOURCES; GEOCHEMISTRY; *AUTOMATIC DATA PROCESSING; DATA SYSTEMS; U. S. GEOLOGICAL SURVEY; *MAPS; CARTOGRAPHY; STRUCTURE CONTOUR MAPS; *SURVEYS; NATIONAL COAL RESOURCES DATA SYSTEM; DATA HANDLING; TIME SHARING; DATA FILES; FORTRAN
SU - GR29
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (PROC) CONFERENCE; (ANAL) ANALYTIC

RE - 78-13683-B (78-15043-B)
TI - COMPUTER-BASED DATA FILES FOR ORE DEPOSITS/ FAKTOGRAFICHESKIYE INFORMATSIONNO-POISKOVYYE SISTEMY PO MESTOROZHDENIYAM POLEZNYKH ISKOPAYEMYKH
AU - UNKSOVA, M. V.; BULAYEVSKIY, I. D.
CO - SVGLA
PU - SOV. GEOL. (SUN)
IM - AUG 1976, NO. 8, P.95-103, 16 REFS.
KE - *AUTOMATIC DATA PROCESSING; ECONOMIC GEOLOGY; DATA STORAGE; DATA BASES; MINERAL RESOURCES
SU - GR26
LA - (RUS) RUSSIAN
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC

RE - 79-15014-B (79-17196-B)
TI - GENERAL GUIDELINES FOR NATIONAL INVENTORIES OF MINERAL RESOURCES
CO - STANDARDS FOR COMPUTER APPLICATIONS IN RESOURCE STUDIES, TAITA HILLS, KENYA, NOV. 8-15, 1977
AU - GILL, D.; DORBOR, J. K.; DUQUE-CARO, H.; GABERT, G.; ISHAG, A. H.; LEE-MORENO, J. L.; PEREZ, W. C.; CARGILL, S. M. (EDITOR); CLARK, A. L. (EDITOR)
CO - IMGJB
PU - STANDARDS FOR COMPUTER APPLICATIONS IN RESOURCE STUDIES; INT. ASSOC. MAT GEOL., J. (III)
IM - OCT 1978, VOL. 10, NO. 5, P.419-423, 5 REFS.
KE - *MINERAL RESOURCES; INVENTORY; *AUTOMATIC DATA PROCESSING; ECONOMIC GEOLOGY; DATA FILES
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (PROC) CONFERENCE; (ANAL) ANALYTIC

RE - 79-38270-B (79-39744-B)
TI - MINERAL RESOURCE INVENTORY
AU - GREGORY, D.
PU - N. S., DEP. MINES, REP. (CAN)
IM - 1974, NO. 75-1, P.21-27, TABLE, SKETCH MAP
GE - N431500 N450000 W0640000 W0661500
KE - *NOVA SCOTIA; ECONOMIC GEOLOGY; MINERAL RESOURCES; CANADA; 1974; INVENTORY; LUNENBURG COUNTY; QUEENS COUNTY; SHELBURNE COUNTY; YARMOUTH COUNTY; DIGBY COUNTY; ANNAPOLIS COUNTY; DATA FILES
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC

RE - 79-29317-B (79-28685-B)
TI - MINERAL RESOURCE INVENTORY
AU - GREGORY, D. J.; MURRAY, D. A. (EDITOR)
PU - MINERAL RESOURCES DIVISION, REPORT OF ACTIVITIES; 1976; N. S., DEP. MINE REP. (CAN)
IM - 1977, NO. 77-1, P.3-4; JOINT PROJECT WITH THE CANADA DEP. OF REG. ECON. EXPANS.
GE - N433000 N470000 W0594500 W0661500
KE - *NOVA SCOTIA; ECONOMIC GEOLOGY; METALS; *AUTOMATIC DATA PROCESSING; CANADA; DATA FILES; INVENTORY; ORE DEPOSITS
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC

RE - 80-01198-B (G4401; 80-02424-B)
TI - DATA ENTRY AND VALIDATION FOR THE CANMINDEX PROJECT
AU - PICKLYK, D. D.
OR - GEOL. SURV. CAN., OTTAWA, ONT., CAN
NU - ISSN 0707-2996
CO - CGSPA
PU - CURRENT RESEARCH, PART B; CAN., GEOL. SURV., PAP. (CAN)
IM - 1979, NO. 79-1B, P.401-406, 10 REFS., ILLUS., TABLE
KE - *CANADA; ECONOMIC GEOLOGY; BIBLIOGRAPHY; *AUTOMATIC DATA PROCESSING; MINERAL RESOURCES; DATA BASES; CANMINDEX
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC

RE - 80-20917-B (G4406: 80-22099-B)
TI - CANADIAN MINERAL OCCURRENCE INDEX (CANMINDEX) OF THE GEOLOGICAL SURVEY OF CANADA
AU - PICKLYK, D. D.; ROSE, D. G.; LARAMEE, R. M.
NU - ISSN 0707-2996
CO - CGSPA
PU - PAP. - GEOL. SURV. CAN. (CAN)
IM - 1978, NO. 78-8, 27 PP., INCL. FRE SUMM., ILLUS., TABLES
KE - *AUTOMATIC DATA PROCESSING; ECONOMIC GEOLOGY; MINERAL RESOURCES; * CANADA; GEOLOGICAL SURVEY OF CANADA; COMPUTERS; DATA BASES; GENERAL
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (MONS) MONOGRAPHIC

RE - 80-26705-B (G4407: 80-26883-B)
TI - COMPUTER-BASED FILES ON MINERAL DEPOSITS; GUIDELINES AND RECOMMENDED STANDARDS FOR DATA CONTENT
OR - CANADA, NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES, MINERAL DEPOSITS WORKING COMMITTEE, OTTAWA, ONT., CAN
NU - ISSN 0707-2996; ISBN 0660101246
CO - CGSPA
PU - PAP. - GEOL. SURV. CAN. (CAN)
IM - 1978, NO. 78-26, 72 PP., 90 REFS., ILLUS., TABLES
KE - *AUTOMATIC DATA PROCESSING; *ECONOMIC GEOLOGY; *MINERAL RESOURCES; DATA BASES; RESOURCES; STANDARDS; GUIDELINES; DATA RETRIEVAL; DATA HANDLING
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (MONS) MONOGRAPHIC

RE - 80-25559-B (G4406: 80-22135-B)
TI - MINERAL RESOURCE APPRAISAL AND MINERAL DEPOSITS COMPUTER FILES IN THE GEOLOGICAL SURVEY OF CANADA
CO - STANDARDS FOR COMPUTER APPLICATIONS IN RESOURCE STUDIES, LOEN, NORWAY, SEPT. 27-OCT. 1, 1976
AU - ECKSTRAND, O. R.; CARGILL, S. M. (EDITOR); CLARK, A. L. (EDITOR)
OR - GEOL. SURV. CAN., OTTAWA, ONT., CAN
NU - ISSN 0020-5958
CO - IMGJB
PU - STANDARDS FOR COMPUTER APPLICATIONS IN RESOURCE STUDIES; A CONFERENCE HELD AS PART OF THE INTERNATIONAL GEOLOGICAL CORRELATION PROGRAM (IGCP); INT. ASSOC. MATH. GEOL., J. (III)
IM - JUN 1977, VOL. 9, NO. 3, P.235-243, 1 REFS., CHARTS, SKETCH MAP
KE - *AUTOMATIC DATA PROCESSING; ECONOMIC GEOLOGY; MINERAL RESOURCES; * SURVEYS; CURRENT RESEARCH; GEOLOGICAL SURVEY OF CANADA; *CANADA; RESOURCES; RESERVES; UNDISCOVERED RESOURCES; DISTRIBUTION; OCCURRENCE; CLASSIFICATION; DATA BASES; REVIEW
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (PROC) CONFERENCE; (ANAL) ANALYTIC

RE - 81-41916-B (G4508: 81-39864-B)
TI - ESTIMATION OF UNDISCOVERED URANIUM RESOURCES IN CANADA
CO - EVALUATION OF URANIUM RESOURCES, VIENNA, AUSTRIA, NOV. 29-DEC. 3, 1976
AU - RUZICKA, V.; WILLIAMS, R. M. (CHAIRPERSON)
OR - GEOL. SURV. CAN., OTTAWA, ON, CAN
PU - EVALUATION OF URANIUM RESOURCES, INT. AT. ENERGY AGENCY, VIENNA, AUSTRIA (AUT)
IM - 1979, P.253-272, 7 REFS., ILLUS.
NO - IAEA AG/61-10
KE - *CANADA; ECONOMIC GEOLOGY; URANIUM ORES; *AUTOMATIC DATA PROCESSING; RESOURCES; INVENTORY; ANALYSIS; MODELS; MIMIC; MIN. IND. MODEL FOR INVENTORIZATION AND COAT EVA; CANMINDEX; METHODS
SU - GR27
LA - (ENG) ENGLISH
FO - (BOOK); (PROC) CONFERENCE; (ANAL) ANALYTIC

RE - 81-49539-B (G4510: 81-51059-B)
TI - MINERAL INVENTORY OF MANITOBA
AU - BAMBURAK, J. D.
OR - MANIT. DEP. ENERGY MINES, MINER. RESOUR. DIV.; WINNIPEG, MB, CAN
NU - ISSN 0228-8311
PU - ECONOMIC GEOLOGY REPORT (WINNIPEG) (CAN)
IM - 1980, NO. 79-6, 41 PP., 31 REFS., MICROFICHE, ILLUS., 23 TABLES, ECON. GEOL. MAPS, ECON. GEOL. MAPS, 1:250,000, 1:1,000,000
NO - INCLUDES INDEXES TO THE METALLIC MINERAL INVENTORY CARDS OF MANITOBA IN BOTH PRINTED-PAPER AND MICROFICHE FORMS
GE - N490000 N600000 W0893000 W1020000
KE - *MANITOBA; ECONOMIC GEOLOGY; MINERAL RESOURCES; CANADA; AUTOMATIC DATA PROCESSING; DATA BASES; DATA HANDLING; MIND COMPUTER FILE; RESERVES; PRODUCTION; NOMENCLATURE; MINES; MAPS
SU - GR26
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (MAPS); (MONS) MONOGRAPHIC

RE - 84-15718-B (G4804: 84-16456-B)
TI - MINERAL OCCURRENCE DATA SYSTEM
AU - O'DRISCOLL, C. F.; GIBBONS, R. V. (EDITOR)
OR - DEP. MINES ENERGY, MINER. DEV. DIV., ST. JOHN'S, NF, CAN; DEP. MINES ENERGY, MINER. DEV. DIV., ST. JOHN'S, NF, CAN
PU - PRELIMINARY CURRENT RESEARCH REPORTS, DEP. MINES & ENERGY, GOV. NEWFOUNDLAND & LABRADOR, ST. JOHN'S, NF, CANADA (CAN)
IM - NOV 1983, P.162-164, SKETCH MAPS
KE - *NEWFOUNDLAND; ECONOMIC GEOLOGY; MINERAL RESOURCES; *AUTOMATIC DATA PROCESSING; *LABRADOR; CANADA; PROGRESS REPORT; MINERAL INVENTORY FILE; NEWFOUNDLAND AND LABRADORF DEPARTMENT OF MINES A; CARTOGRAPHY; OCCURRENCE; DATA HANDLING; DATA BASES
SU - GR26
LA - (ENG) ENGLISH
FO - (BOOK); (ANAL) ANALYTIC

RE - 85-06601-B (G4901: 85-04336-B)
TI - METALLOGENIC ANALYSIS OF THE STEWART AREA, BRITISH COLUMBIA; A STATISTICAL APPROACH
AU - GRIFFITHS, J. R.; SHARP, J. L.
OR - UNIV. ARK., DEP. GEOL., FAYETTEVILLE, AR, USA
NU - ISSN 0361-0128
CO - ECGLA
PU - ECONOMIC GEOLOGY AND THE BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS (USA)
IM - DEC 1984, VOL. 79, NO. 8, P.1897-1904; 14 REFS., ILLUS., 5 TABLES, GEOL. SKETCH MAP
GE - N553000 N563000 W1293000 W1301500
KE - *BRITISH COLUMBIA; ECONOMIC GEOLOGY; BASE METALS; POLYMETALLIC ORES; * MINERAL DEPOSITS; *GENESIS; CLASSIFICATION; *AUTOMATIC DATA PROCESSING; CANADA; STEWART; STATISTICAL ANALYSIS; MINFILE; DATA BASES; VEIN SYSTEMS; VOLCANIC PROCESSES; SYNGENESIS; DIAGENESIS; METALLOGENY; MINERAL DEPOSITS, GENESIS
SU - GR27
LA - (ENG) ENGLISH
FO - (ARTC) ARTICLE; (ANAL) ANALYTIC