

MINERAL OCCURRENCE DATA SYSTEM

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ABSTRACT

The Mineral Occurrence Data System (MODS) is a three-part database consisting of a manual Mineral Inventory File, mineral occurrence maps on geological bases and a computerized Mineral Inventory Database. The MODS contains information on approximately 4500 mineral occurrences and is designed to offer fast and easy access to information on the province's mineral resources.

INTRODUCTION

The Mineral Occurrence Data System (O'Driscoll *et al.*, 1991) consists of a manual Mineral Inventory File, mineral occurrence maps on geological bases and a computerized database (Figure 1). The project is designed to offer an efficient information service about all the mineral occurrences in Newfoundland and Labrador.

Most of the MODS information is compiled from a systematic search of mineral-exploration company assessment reports. Other sources of information include publications by the Geological Survey of the Newfoundland Department of Mines and Energy, the Geological Survey of Canada, published news items, publications in geological and mining journals, and personal communications from mining company and government personnel.

MANUAL MINERAL INVENTORY FILE

The manual Mineral Inventory File is part of the National Mineral Inventory and consists of mineral occurrence reports that summarize all data on known mineral occurrences in the province. It presently contains about 4500 reports, which include coverage for the Island of Newfoundland (Figure 2) and selected areas in Labrador (Figure 3).

The Mineral Inventory File is continually being updated. This file was started in 1978, and since then, new geological mapping and exploration have been carried out and many new occurrences have been discovered.

Mineral occurrence maps containing updated geological bases have been published at a 1:250 000 scale and are available upon request from the Geological Survey,

Geoscience Publications and Information Section. In addition, selected areas have been published at 1:50 000 and 1:100 000 scales. These maps show locations and provide a listing and a brief description of the occurrences. An industrial minerals map of the Island of Newfoundland at 1:1 000 000 scale on a geological base, is also available. This map contains locations, a listing and a brief description of the various mineral occurrences.

MODS REPORTS TO BE MADE AVAILABLE ON CD-ROM

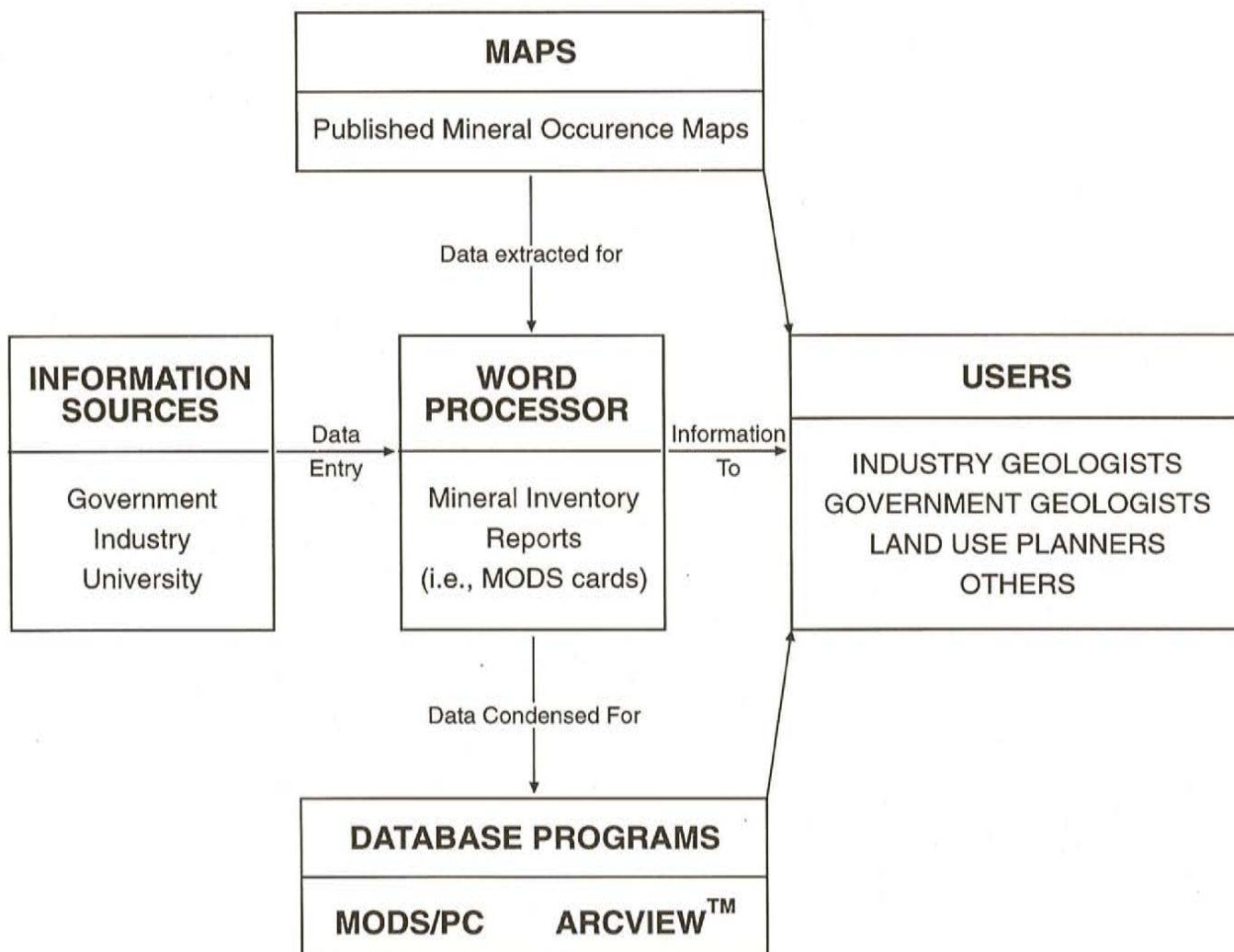
Presently MODS clients can only access mineral inventory reports (manual file) by acquiring hard copies from the Geological Survey. They exist in WordPerfect format on diskette. However, plans are being made to make them available on CD-ROM. This project will be undertaken in 1997.

COMPUTERIZED MINERAL INVENTORY DATABASE

Since 1978, a computerized Mineral Inventory Database, which parallels the manual file and contains information selectively extracted from it, has been developed and maintained. Over the years the computerized database and the database software has evolved and changed as a result of technological advances and client demand.

GRASP

The MODS first used the mainframe-based Geological Retrieval and Synopsis Program (GRASP), which was developed by the United States Geological Survey (Bowen and Botbol, 1975) as its database management software.



The three components of the Mineral Occurrence Data System (MODS) are mineral inventory reports, mineral occurrence maps and the computerized database. These can be used either individually or collectively.

A user may study the mineral occurrence map of an area to identify occurrences of interest and can then peruse the mineral inventory reports to find detailed information on one or more specific mineral occurrence(s).

Occasionally a user may want less detailed information on all occurrences of a particular type, for example, vein type, located over a large geographic area. Particular information can be selected from the database and saved on disk, displayed on screen or printed out in a report.

Mining company personnel or individuals interested in claim staking will first want to assess an area's mineral potential. Information retrieved by searching MODS for ArcView™ or MODS/PC can be used to focus and define geographic areas of interest. More detailed information can be obtained from mineral inventory reports or from the list of references given in each report.

Figure 1. Organization and operation of the Mineral Occurrence Data System.

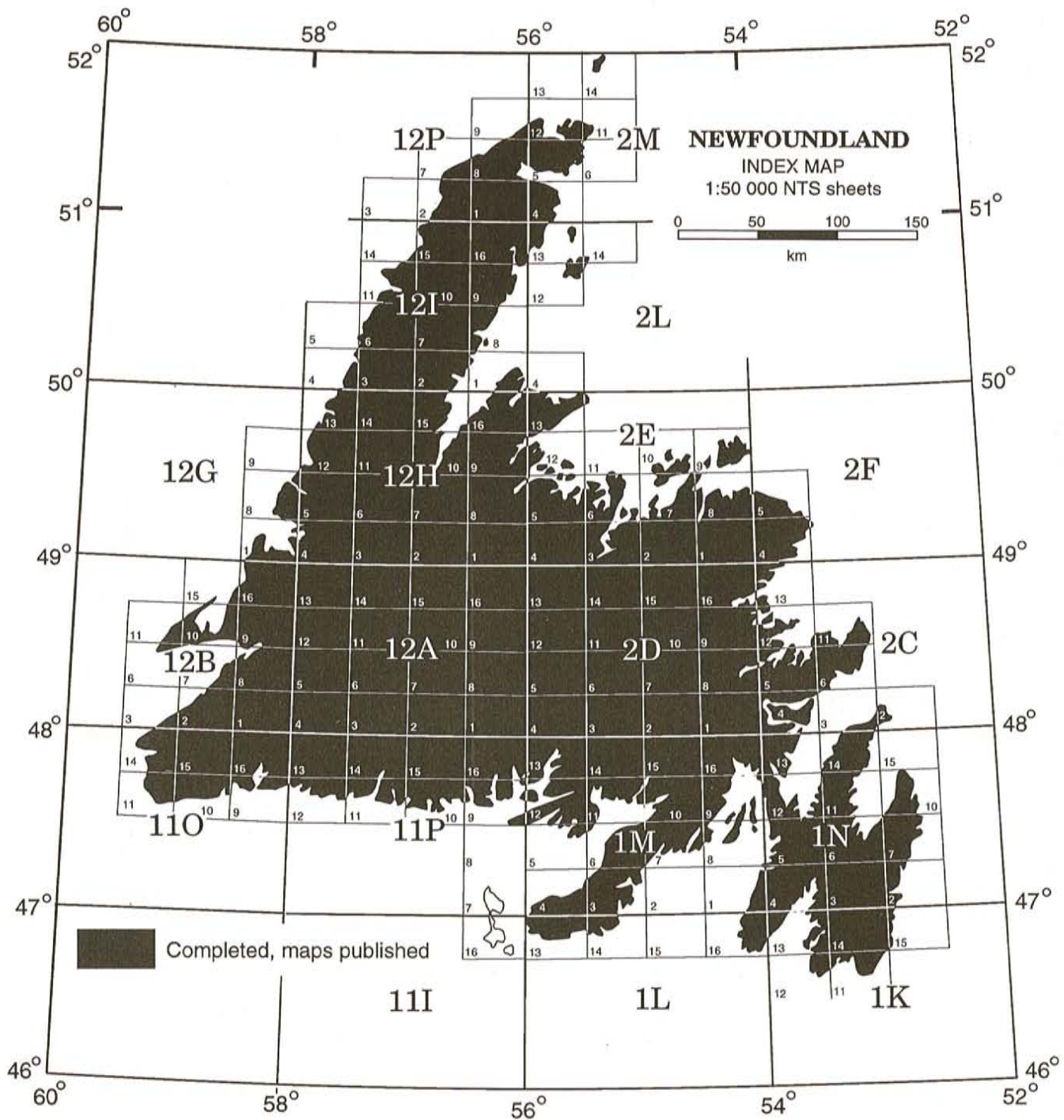


Figure 2. Index map for Mineral Occurrence Data System project, insular Newfoundland.

Although GRASP is a powerful program that allows complex searches to be performed, it is not user friendly or available for microcomputers. Therefore, clients had to visit the Geological Survey office to use it.

MODS/PC

As a result of the proliferation of microcomputers and the demand for easier access to MODS information, a micro-computer-based MODS, called MODS/PC, was developed

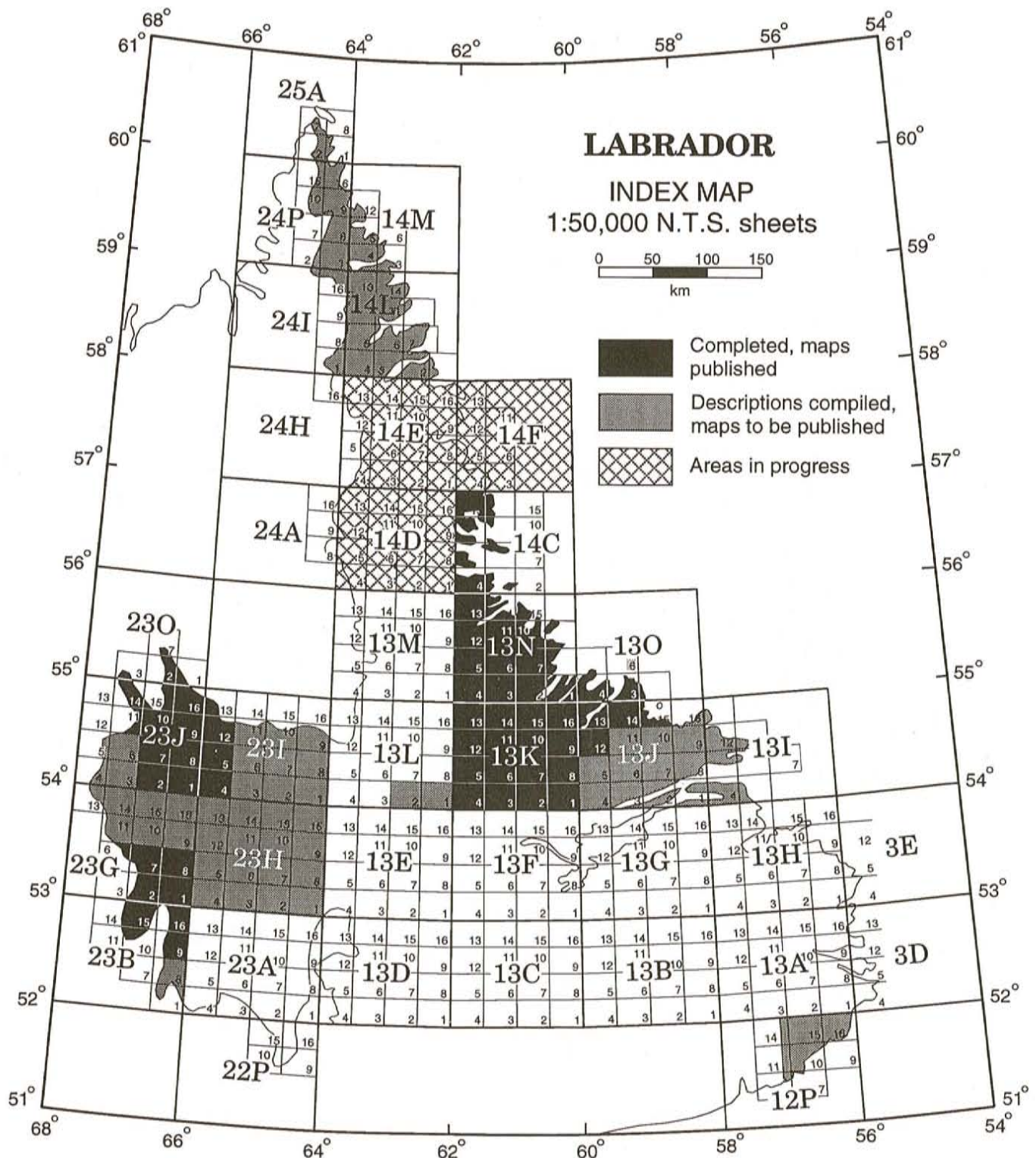


Figure 3. Index map for Mineral Occurrence Data System project, Labrador.

and released in 1991 (Stapleton and Parsons, 1991). MODS/PC is a menu driven, user friendly, "turn-key" system that is designed to run on an IBM compatible microcomputer with a 286, or better, processor. Since its release in 1991

MODS/PC has been very well received. Presently, there are approximately 80 companies and individuals on the subscribers list.

Table 1. Fields and field descriptions from MODS for ArcView™ record

dep name	Usual name for occurrence																		
alt name	Alternate name for occurrence																		
nmino	National mineral inventory number																		
major com	Major commodity present																		
mod type	Symbol for major commodity present																		
minor com	Secondary commodities present																		
dep type	Deposit type; coded genetic classification of deposit																		
dep char	Deposit description																		
status	Numeric code indicating amount of work done and hence the amount of information available on a deposit <ol style="list-style-type: none"> 1. Producer - Commodity is extracted for sale 2. Developed Prospect - Reserves or demonstrated resources of the commodity can be calculated but the commodity has not yet been produced (i.e., three dimensional data plus grade). 3. Past Producer Dormant - the commodity is no longer produced, although there are known reserves or demonstrated resources 4. Past Producer Exhausted - the commodity is no longer produced and there are no longer reserves or demonstrated resources 5. Prospect - two dimensional data and grade are available but not enough data to calculate reserves 6. Showing - mineralization exists in outcrop with little information known about its spatial extent. Assay data exists. 7. Indication - An indication of the existence of the commodity, i.e., field observation, grab sample, assay, etc. 																		
status key	Alpha description of numeric status code as described in status above																		
geology	Code for geological unit in which occurrence lies																		
tect zone	Tectonic-stratigraphic zone in which occurrence lies																		
host rock	Rock type(s) associated with deposit																		
str unit	Stratigraphic unit in which occurrence lies																		
rocks	Rock type(s) associated with deposit																		
geolwk	Geological work done? y = yes																		
geophwk	Geophysical work done? y = yes																		
geochwk	Geochemical work done? y = yes																		
DDH	Number of drill holes into the deposit																		
trench	Trenching? y = trenching done																		
adit	Adit? y = adit present																		
shaft	Shaft? y = shaft present																		
working	Type of mine workings. This field would have a value for deposits of status 1, 3 or 4 <table style="margin-left: 20px;"> <tbody> <tr> <td>Underground</td> <td>- u</td> </tr> <tr> <td>Open Pit or Quarry</td> <td>- o</td> </tr> <tr> <td>Strip</td> <td>- s</td> </tr> <tr> <td>Placer</td> <td>- p</td> </tr> <tr> <td>Solution/Leaching</td> <td>- l</td> </tr> <tr> <td>Underground and Open Pit</td> <td>- uo</td> </tr> <tr> <td>Underground and Strip</td> <td>- us</td> </tr> <tr> <td>Underground and Placer</td> <td>- up</td> </tr> <tr> <td>Uncertain</td> <td>- un</td> </tr> </tbody> </table>	Underground	- u	Open Pit or Quarry	- o	Strip	- s	Placer	- p	Solution/Leaching	- l	Underground and Open Pit	- uo	Underground and Strip	- us	Underground and Placer	- up	Uncertain	- un
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Uncertain	- un																		
size	The Workings Size (size) field gives an indication of the size of the mine and would only have a value for deposits of Status 1, 3 or 4. It is a single digit alpha field that has three (3) possible values, s - small, m - medium and l - large. This field is divided into two (2) categories. <ol style="list-style-type: none"> 1) Underground - Size is based on total lateral advances out from a minimum 60-foot adit or shaft. <table style="margin-left: 20px;"> <tbody> <tr> <td>s =</td> <td>small, < 1500 m</td> </tr> <tr> <td>m =</td> <td>medium, 1,500 m - 15,000 m</td> </tr> <tr> <td>l =</td> <td>large, > 15,000 m</td> </tr> </tbody> </table> 2) Open Pit/Strip/Placer - Size is based on amount of rock removed. Minimum 300 cu. m. <table style="margin-left: 20px;"> <tbody> <tr> <td>s =</td> <td>small, <30,000 cu. m</td> </tr> <tr> <td>m =</td> <td>medium, 30,000 - 150,000 cu. m</td> </tr> <tr> <td>l =</td> <td>large, >150,000 cu. m</td> </tr> </tbody> </table> 	s =	small, < 1500 m	m =	medium, 1,500 m - 15,000 m	l =	large, > 15,000 m	s =	small, <30,000 cu. m	m =	medium, 30,000 - 150,000 cu. m	l =	large, >150,000 cu. m						
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prores	Statement of deposits production and reserve figures																		
utmzone	UTM Zone in which the occurrence falls																		
utmeast	Easting coordinate																		
utmnorth	Northing coordinate																		
nts	NTS area																		

MODS FOR ARCVIEW™

Selected fields from the MODS/PC record (Table 1) are available on CD-ROM with the Geochemical Atlas of Newfoundland (Davenport *et al.*, 1994). The atlas operates as a "turn-key" system on a microcomputer and uses ArcView™ as its viewing system. Along with geochemical and mineral deposit data, the atlas provides access to many other geoscientific databases. This system enables MODS users to view abbreviated mineral deposit data in a broad geoscientific context.

WORK IN PROGRESS

This past year, in the wake of the Voisey's Bay nickel-copper-cobalt discovery, mineral inventory personnel were busy filling information requests on the mineral occurrences and mineral potential of Newfoundland and Labrador.

Mineral occurrence data for the Buchans-Roberts Arm Belt have been updated and released on CD-ROM. These data form the mineral deposits layer for the Buchans-Roberts Arm Multidisciplinary Project that was initiated in 1995 by the Newfoundland Geological Survey.

Work is well underway on a preliminary compilation of new mineral occurrence data that have been reported by mineral exploration companies working in northern Labrador. The main source of information is company press releases because company assessment reports are still confidential. This compilation will form the mineral deposits layer of a larger geoscience database that will cover NTS map sheets 14C, D, E and F and will be published on CD-ROM in the near future.

Mineral deposit data is presently being updated and compiled for the Florence Lake and Hunt River Archean greenstone belts of central-eastern Labrador. This information will form the mineral deposit component of the Kanairiktok Multidisciplinary Project, which was initiated by the Geological Survey of Newfoundland in 1995. The project output will be published on CD-ROM.

A study to determine the feasibility of establishing a National Park in the Mealy Mountains of southern Labrador began in June 1996. This assessment is expected to take from between 2 and 3 years to complete. Mineral inventory geologists will be reviewing the study area in order to document any new mineral occurrences that have been found there so that the mineral potential within, and proximal to, the park boundaries can be assessed.

MODS USERS

The MODS is used primarily by mineral-exploration company personnel, however, it is also used by mineral-exploration consultants, independent prospectors, geotechnical consultants, personnel and students of academic organizations and the general public.

The MODS 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, forest management plans and any other developments that may conflict with future mineral exploration and development. In addition, municipal councils and the provincial 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, parks, water reservoirs and sewage-disposal systems can be located, where possible, in areas of low-mineral potential.

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.

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