

NEWFOUNDLAND MINERAL OCCURRENCE DATA SYSTEM

C.F. O'Driscoll
Mineral Deposits Section

INTRODUCTION

The Newfoundland Department of Mines and Energy initiated a Mineral Inventory project in 1971 in order to provide a readily accessible file of index cards which would summarize 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 a booklet of mineral occurrence tables (Douglas, 1976a,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, N.T.S. 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 N.T.S. 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.

The present Mineral Occurrence Data System was devised in 1978 after research into mineral inventory files across Canada and the United States. 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,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 that 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 (see Figure 1). 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 \$0.50 and contains several descriptions depending on their length. All areas on the island of Newfoundland have been microfiched, including 13K, 13N and 14C in Labrador.

1:250,000 scale mineral occurrence maps with updated geological bases are being prepared for printing. To date, fifteen maps have been printed and are available upon request at a cost of \$3.00 each. These are 1K, 1N, 2C, 2D, 2E, 2F, 2M, 11O, 12B, 12G, 12H, 12I/2L, 12P, 13K, 13N and 14C. In addition, a 1:100,000 scale map of parts of 13J and 13O 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, including the name, status and minerals present. Published maps for most of Newfoundland and some parts of Labrador will be available within a year.

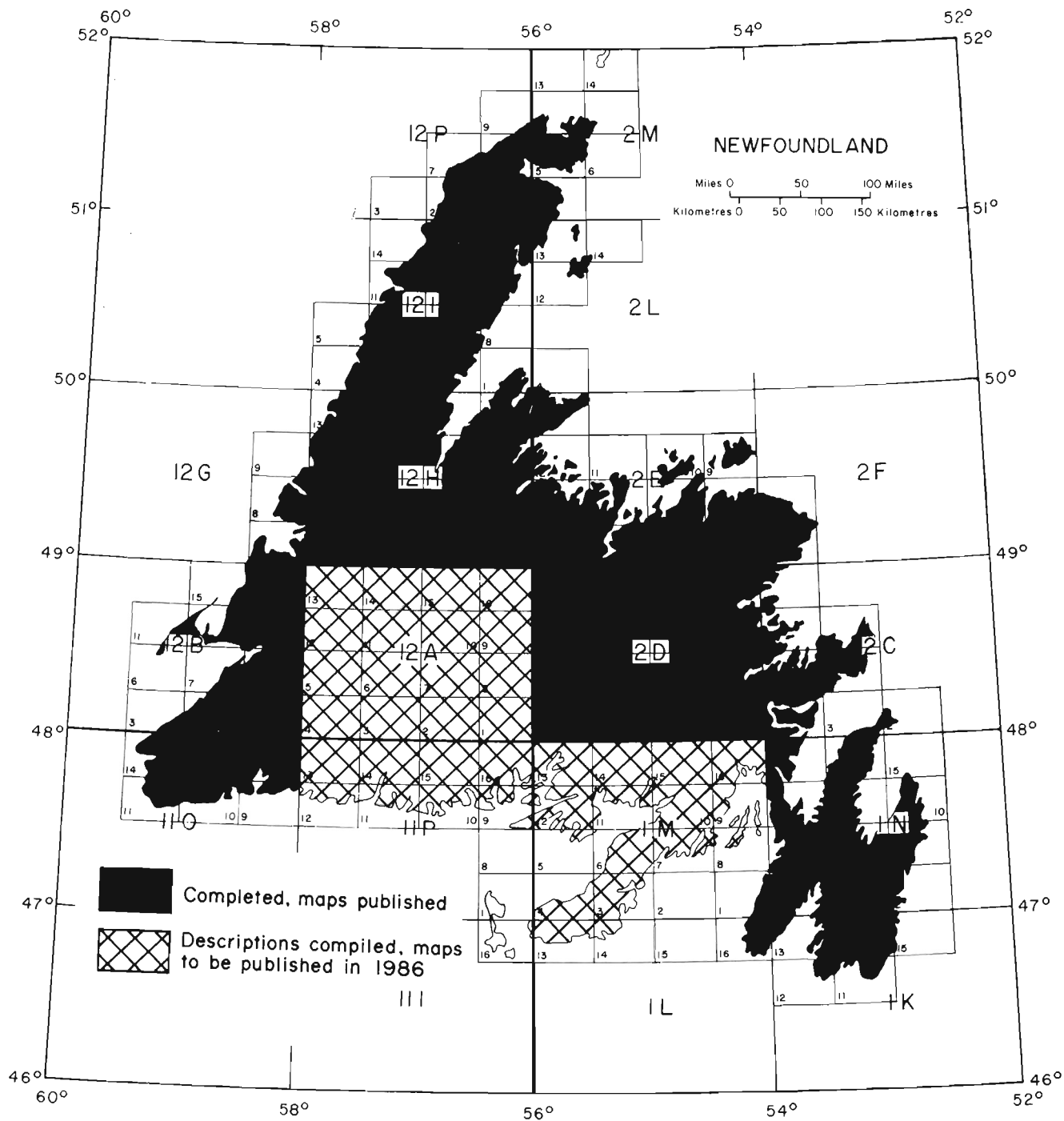


Figure 1: Index map for Mineral Occurrence Data System project, insular Newfoundland.

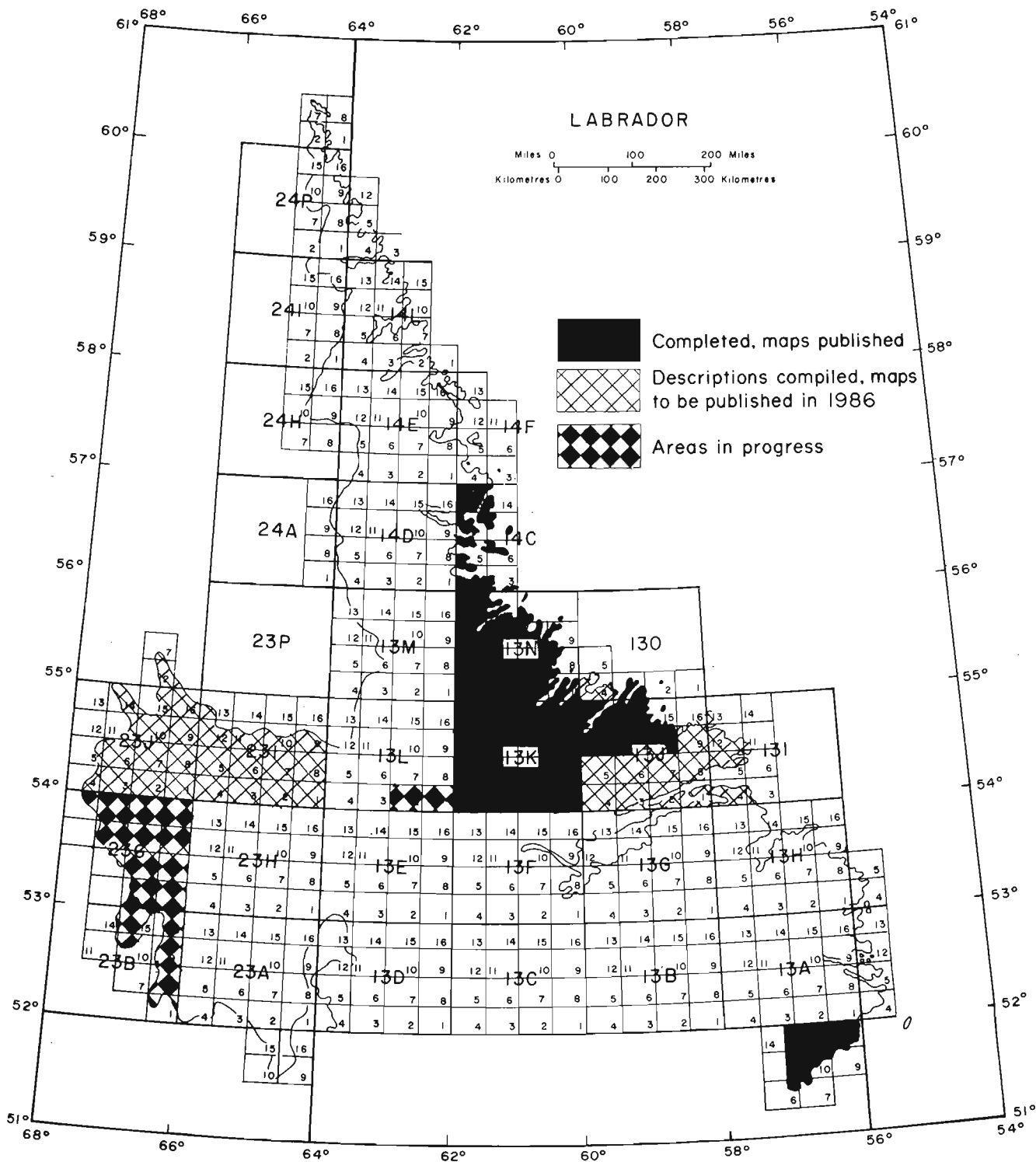


Figure 2: Index map for Mineral Occurrence Data System project, Labrador.

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: identification, name and ownership, location, description of deposit, geological setting, exploration and development, and bibliography.

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. Presently, all of the island of Newfoundland and 13I, 13J, 13K, 13N, 13O and 14C in Labrador have been keypunched, edited and entered in the GRASP system.

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: 1) the exploration geologists and prospectors engaged in the search for mineral deposits in the province, 2) the geological staff of the Department of Mines and Energy engaged in mapping and evaluating the mineral potential of the province, 3) 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 4) 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 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. These are then adapted to the National Mineral Inventory, MINSYS and CANMINDEX.

The file is available to anyone who is researching mineral deposits in 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.

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. Newfoundland Department of Mines and Energy, Mineral Development Division, pages 6-8.
- McArthur, J.G.
1978: Mineral evaluation section activities. *In* Report of Activities. 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. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 79-1, pages 182-196.