Drill Core Library Programs 1997

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Introduction

The departmental Core Library is based in Stellarton, Pictou County (NTS 11E/10), where a modern facility houses most of the department's drill core. Drill core and other sample materials are received from mineral exploration and development projects conducted by the private sector as well as from departmental field work. A large collection of drill core and other reference material is thereby preserved and made available to exploration and research geologists, in order that they may enhance the knowledge of Nova Scotia's geology and mineral resources by further study and analysis of the core and other samples, in conjunction with their field, laboratory and office studies. In addition to drill core, sample media available for further work include well cuttings from oil and gas drilling, rock slabs, and geochemical samples (silts, till, soils, lake sediments and biogeochemical samples). All core is available for examination by interested parties and may be sampled subject to certain constraints and conditions. Logs, reports and maps are also available for consultation. It is recommended that all visitors give advance notice (preferably 24 hours) of an intended visit to ensure the availability of staff, core and equipment. Staff may be contacted by phone at **902-752-4842** or **902-755-7038**, by fax at **902-755-7186**, or by e-mail at **corelib@fox.nstn.ca**.

Facilities and Services

The main Core Library facility is centrally located in Nova Scotia, 2 km off the Trans-Canada Highway at 105-109 Acheron Court in the Stellarton Industrial Park, Pictou County. Five purpose-built buildings total 4000 m^2, including 300 m^2 of laboratory space and 120 m^2 of office space (Fig. 1). Abundant free parking is available at the door. Unmanned storage buildings are located at West Paradise (the Eden Building) near Bridgetown, Annapolis County, and in the Scotia Subdivision of the Debert Industrial Park, Colchester County.

Core is stored mostly in standard 5 ft. long wooden core boxes (15-25 ft. capacity, depending on core size). Boxes of core are stored on custom-made, wooden pallets which are then stacked in rows in the storage areas, which only have basic lighting and are unheated. When required, individual pallets are retrieved from storage and transferred by fork-lift to the core examination labs, where the core boxes may be laid out for viewing, using benches, portable stands, or the floor. A large paved yard also serves as a core box layout area during good weather. The Core Library is equipped with binocular microscopes, hand-held UV lights, photographic equipment, core-splitters and diamond saws.

A small reference library is set up on the ground floor with tables, chairs and a microfiche reader-printer available for the use of both clients and staff. All nonconfidential assessment reports and all open file reports, open file illustrations and open file maps are available on microfiche, and copies of most of the reports, papers, maps and other minerals-related NSDNR publications are available for reference.

Two interlinked PC-based databases contain information related to drilling done in the province and to the holdings of the Core Library. These databases are maintained by staff at the Core Library, and can be searched by staff for any information requested by clients. Drillholes with known geographic co-ordinates can also be displayed as map plots (video screen or print) using the department's ArcView®-based geographic information system (GIS). To take better avantage of GIS technology, computer equipment was upgraded in early 1997 by purchasing an IBM-compatible Pentium 166 equipped with 32 MB RAM, a CD-ROM, a fax-modem and a 17 inch monitor. Other computers consist of 486s and 386s, and a notebook 486. A 100 megabyte Zip drive provides back-up capability and storage for GIS files. Fax-modems on three machines provide the capability for e-mail communications.

Other equipment purchased in 1997 included steel shelving to accommodate hard-copy assessment reports and a work platform for use with the fork-lift truck.

The transfer of activities to the Core Library from the Mines Building on Bridge Avenue in Stellarton continued during the year as part of the planned removal of all departmental functions from the Mines Building. At the end of 1997, Paul McCulloch, Kevin Gillis, and Jim DeWolfe were still located in the Mines Building, but essentially all services and materials had been relocated to the Core Library, including reception and library services.

Figure 1. Core Library headquarters in Stellarton.

The sample storage cabinets containing archived geological and geochemical samples, previously stored at the Mines Building, were also transferred to the main facility in the Stellarton Industrial Park.

Staffing changes at the Core Library in 1997 consisted of the early retirement of Jim Hayes, technican and form diamond-driller, in June, and the transfer from Bridge Avenue in August of Shirley Ross, receptionist and clerk. At year-end, technical and professional staff at the Core Library consisted of a mineral technician, two project geologists and a supervising geologist.

Holdings and New Acquisitions in 1997

Approximately 620 000 m of core were held in storage in all locations at the end of 1997. In addition to core, the Core Library maintains a complete set of drill cuttings (chips) from all wells drilled for oil and gas in Nova Scotia and its offshore areas. Also, a great variety of different types of samples and sample collections are stored in Core Library facilities, ranging from materials collected in the field by staff, including geochemical sample suites, rock slabs and till samples, to collections of soil and rock samples donated by exploration companies.

Core donated to the department is sometimes delivered by the donating company, but more usually the core is collected from its field location by Core Library staff using departmental vehicles (fig. 2). In 1997, 3745.7 m of drill core from 41 drillholes were received at the Core Library. Almost all of this core was generated from exploration work carried out by the private sector during 1996 and 1997 (Table 1).

1997 Activity

The majority of clients at the Core Library are either geological staff of NSDNR (Mineral and Energy Resources Division) or exploration geologists working in the private sector. Activity at the Core Library facilities often reflects the activities of these two client groups. Visits from representatives from both sectors were at a reduced level in 1997 from the previous year (Table 2). Despite a busy start to the year by exploration personnel, which reflected the overall healthy nature of the exploration sector in late 1996 and early 1997 after a long period of difficulty, activity dwindled again during the spring and summer as a result of the lack of investor confidence following the Bre-X fiasco. Continuing uncertainty over access to land for some promising exploration projects also resulted in the suspension of

Table 1. Drill core acquisitions at the NSDNR Drill Core Library, January 1 to December 31, 1997.

NTS	Company or organization	Year(s) drilled	Commodity or Project	Location	County	No. of holes	Hole Designation	Core Size	Total Feet	Total Metres
11E/03	KaoClay Resources Inc	1996	Kaolin clay	Sibley Road, Middle Musquodoboit	Halifax	4	SRH-96-1 to SRH-96-4	PQ	321	97.8
11E/07	Mispec Resources Inc	1997	Base metals	St. Pauls	Pictou	1	SP-97-2	NQ, BQ	577.4	176
11E/07	Mispec Resources Inc	1997	Base metals	Bridgeville	Pictou	3	B-97-1 to B-97-3	NQ	1053.1	321
11E/07	Mispec Resources Inc	1997	Base metals	Sunny Brae	Pictou	5	ERP-97-1 to ERP-97-4	NQ	2390.1	728.5
11E/07	Mispec Resources Inc	1997	Base metals	Springville	Pictou	1	S-97-1	NQ, BQ	475.7	145
11E/08	Midland Minerals	1997	Base metals	West Lochaber	Antigonish	3	M-17-97 to M-19-97	BQ	870	265.2
11E/10	Mispec Resources Inc	1997	Base metals	Meadowville	Pictou	2	M-97-1 to M-97-2	NQ, BQ	1043.3	318
11E/12	Alterra Resources Inc	1996	Gold	Collingwood	Cumberland	1	CW96-5	NQ	382	116.4
11F/14	KaoClay Resources Inc	1997	Kaolin clay	Melford	Inverness	2	MF-97-1 and 2	NQ	230	70.1
11F/14	KaoClay Resources Inc	1997	Kaolin clay	Kingsville	Inverness	1	RI-97-1	NQ	137.8	42
11F/14	KaoClay Resources Inc	1997	Kaolin clay	Diogenes Brook	Inverness	2	DB-97-1 and 2	NQ	418.3	127.5
11F/14	KaoClay Resources Inc	1997	Kaolin clay	Big Marsh	Inverness	1	BM-97-1	NQ	195.2	59.5
11F/14	KaoClay Resources Inc	1997	Kaolin clay	Ashfield	Inverness	4	AF-97-1 to AF-97-4	NQ	359.6	109.6
11F/15	KaoClay Resources Inc	1997	Kaolin clay	Jubilee	Victoria	2	JBL-97-1 and 2	NQ	402.2	122.6
11F/16	Municipal Ready Mix Ltd	1997	Aggregates	MacEachern Lake	Cape Breton	5	REB-1, REB-3 to REB-6	NQ	472	143.9
11K/02	KaoClay Resources Inc	1997	Kaolin clay	Middle River	Victoria	2	MR-97-1 and 2	NQ	167.3	51
21H/01	NSDNR Mineral and Energy Resources Division	1991/2	Geological investigations	Canaan	Kings	2	CAN-91-01 and CAN-92-02	NQ, BQ	2794	851.6
Totals						**41**			**12,289**	**3745.7**

Table 2. Core Library statistics, 1993-1997.

	1993	1994	1995	1996	1997
Clients					
Staff / Non-staff	73 / 85	44 / 98	53 / 83	58 / 117	36 / 93
Total	**158**	**142**	**136**	**175**	**129**
User-days					
Staff / Non-staff	162 / 159	102 / 220	77 / 165	83 / 178	54 / 183
Total	**321**	**322**	**242**	**261**	**237**
Core examined	353	412	285	178	295
Samples taken	574	1 085	449	442	439
Drill core received	282	238	119	75	41
Metres of core received	33 220	27 345	11 040	4 542	3 746

field activities by the private sector. Within the department, it appears that staff reductions and leaves of absence, together with a reduction in field work at the end of some multi-year projects, contributed to the decline in visits from departmental staff.

Private sector groups that made use of the Core Library included two companies drilling for base metals in Pictou and Antigonish Counties, companies drilling for gold in Halifax County, a company carrying out extensive exploration work for kaolin and silica sand in the Musquodoboit Valley and other areas, and an oil company from Calgary investigating previously drilled holes for hydrocarbon sources. In addition, Core Library staff responded to numerous requests for information from the Drillholes Database, and supplied sample material for follow-up analysis of previous departmental field work.

Drill Core Evaluation

As time and resources permit, packages of drill core from selected areas or projects are evaluated in order to try to reduce the total amount of core from a particular area while still maintaining the integrity and value of the collection. The evaluation process also ensures that core retained in the permanent collection is properly identified and documented and that it meets a variety of criteria based on the needs of clients and staff. Core that does not meet these criteria can be removed from the collection after consultation with interested parties. Core may be recommended for disposal for any or all of the following reasons: poor or unusable condition, excessive sampling, inadequate labelling, duplication, poor documentation, or low geological interest from either a research or mineral evaluation perspective. All these criteria require that a careful assessment be made by an experienced geologist before recommendations are put forward, usually in consultation with other geologists familiar with the drilling project or the area under study.

All evaluations and recommendations are supported by written reports providing detailed reasons for retaining or disposing of core. Core that has been recommended for disposal is kept on hand pending input from interested parties and a final decision to discard. Any core that is to be removed from the collection will be photographed, and surplus core in good condition will be offered to university geology departments and others as an alternative to being discarded.

Photograpy of drill core provides visual documentation from which staff and clients can quickly and easily preview sections of interest, and which can also be retained in the records even after the core itself has been discarded. The photographic medium used is 35 mm colour slides, which can be projected to full size in natural colour. Core is usually photographed during the evaluation process, when the core has been straightened up and correctly identified and labelled, but it can be done at any time, depending on the need.

Future plans include the acquisition of a digital camera in place of the traditional film-based camera. Electronic images will then be incorporated into the databases, eliminating the need for the more costly and cumbersome slide processing and storage. Use of this

technology will provide clients with the ability to preview core when they receive custom listings of core either on diskette or on-line. The high cost of digital cameras with acceptable resolution may preclude implementation of this technology for another year or two. In the meantime efforts will be made to obtain the loan of suitable equipment to test the viability of incorporating images into the Drill Core Database. Previous experiments using still shots from a video camera tape found this method to produce unacceptable resolution.

During 1997, work continued on the evaluation and photography of core obtained from three exploration projects in the Meguma Terrane of the southeastern mainland, and from one project in the Paleozoic of northern Nova Scotia (probably the Devonian Fountain Lake Group). The Meguma projects included diamond-drill core from Caribou Mines and Moose River, both in Halifax County, and from Goldenville in Guysborough County. The other core was collected from West Lochaber in southern Antigonish County. A total of 8007 m of core from 87 diamond-drill holes were examined and photographed, adding 332 photographic slides to the collection (Table 3).

To date, 48 283 m of the drill core from Meguma Group gold exploration (out of the approximately 60 000 m in the Core Library collections) have been examined and photographed. The core examined is in very good condition and none of it has been "whole core" sampled.

Core Library Databases and GIS

The Core Library maintains two databases containing information on drilling in Nova Scotia, the Drillholes Database and the Drill Core Database.

The Drillholes Database provides information on drilling related to mining, mineral or hydrocarbon exploration and development, or geological investigations. The database provides basic information on each drillhole, such as location (including claim reference map, tract and claim, latitude and longitude, and UTM co-ordinates), depth of hole, year drilled, exploration company, drilling contractor, types of mineralization, and references to assessment reports and other source documents. This database is updated on a continuing basis with information from newly released assessment reports and other sources.

The Drill Core Database provides information on all drill core that the Core Library has in its collection, including operational data such as the storage location and a record of usage and sampling. Much of the basic

Table 3. Core lots evaluated and photographed in 1997.

COMPANY	DDH SERIES	YEAR OF DRILLING	NTS	LOCATION	COUNTY	PURPOSE	NO. OF HOLES	METRES	FEET	NO. OF SLIDES
Seabright Exploration Ltd.	MR-88-219	1988	11D/15	Moose River	Halifax	Gold exploration	1	54	177	3
Antioch Resources Ltd.	89-1 to 89-20	1989	11E/02	Caribou Mines	Halifax	Gold exploration	18	2187	7,173	69
Goldenville Exploration Ltd.	G-1 to G-71*	1984	11E/01	Goldenville	Guysborough	Gold exploration	65	5462	17,916	250
Midland Minerals	M-17 to M-19	1997	11E/08	West Lochaber	Antigonish	Base metals exploration	3	304	997	10
TOTALS							87	**8,007**	**26,263**	**332**

*not inclusive

drillhole information is common to both databases, so they have been linked electronically for greater efficiency. The Drill Core Database was first developed in 1990 on a personal computer using Advanced Revelation® database software and is being continuously developed and updated.

These databases can be custom searched for clients and staff by any combination of fields to produce either a printed hard copy or an electronic file with the required information. For example, the databases may be searched by place name, company name, hole number, map sheet, mineralization or year, or by various combinations of these fields.

In November 1994, responsibility for the Drillhole Database was transferred from the Halifax office to the Core Library in Stellarton and it is now maintained and updated by Donald Weir. This database has been updated with non-confidential information that was available to November 1997, and in early December it contained 21,314 drillhole records, an increase of 66 over 1996.

The Drill Core Database is updated daily and in December 1997 it contained 7233 records of which 4615 are linked with the Drillholes Database. Where records are linked or related, the information in both databases on a particular drillhole can be accessed through either database. Some records remain unlinked becaused the lack of documentation in assessment or open file reports precludes their inclusion in the Drillholes Database.

During the summer of 1997, with the assistance of a student employee, a complete inventory check of all drill core was done in the Stellarton facilities to ensure that the Drill Core Database was accurate. Numerous changes were made in the database to reflect changes in storage location and to correct or improve other data fields. Also, editing was completed on the 4615 drill core records that are related to the Drillholes Database, to ensure that equivalent records in each database are compatable and accurate.

In 1996 a new software program was installed that can be customized to provide a more "user-friendly" and faster software environment for database users. OpenInsight for Workgroups® is a Windows-based program compatable with Revelation® software. An application has been set up in OpenInsight® that facilitates information searches in both databases by the use of on-screen prompts.

A GIS program is now in use at the Core Library, with the Advanced Revelation® database files being added to ArcView® as dBASE® files (tables). Drillholes can be plotted in ArcView® using eastings and northings as X and Y co-ordinates. Digital versions of the 1:500 000 Geology Map of Nova Scotia and the 1:50 000 NTS maps are available for use with the Drillholes Database. The Drillholes Database can be searched in ArcView® from any of the fields or by geographic features on the maps. Holes of interest can be highlighted on these maps and this information and the map can be printed on letter- or legal-sized paper.

Drill Logs of Government Core Drills

Reports summarizing departmental core drilling programs were published annually until 1986, but have not been compiled since then. Responsibility for this function was passed to the Core Library in 1993 and work has been under way since then to obtain and compile the relevant information. The next edition of the publication will be a final multi-year compilation covering the period from 1987 to the termination of the department's drilling activities in October 1996. It will contain abbreviated geologist's logs instead of the driller's logs used in previous editions, and will contain more detail relevant to each drill project. Information and logs were received throughout 1996 as they became available, and some preliminary work was done for the preparation of location maps. Work continued intermittently during 1997 on this program. Much of the preparatory compilation work for text and logs has been completed, but logs and other information for several projects, as well as the majority of location maps, are not yet available.