

geogram



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THE "NEW" GEOLOGICAL SURVEY OF CANADA

The "new" Geological Survey of Canada has a proud heritage in two of Canada's oldest and highly respected scientific institutions – the Earth Physics Branch and the Geological Survey of Canada.

The Earth Physics Branch had its formal beginnings in the late 19th century when the Federal Government needed a national time service and other astronomical data to guide the topographical surveying of its vast territory. In June of 1890 Dr. W.F. King was appointed Chief Astronomer of Canada and together with O.J. Klotz and E.G. Deville initiated an observatory on a site just west of the Parliament Buildings in Ottawa. When the forerunner of the Earth Physics Branch, the Dominion Observatory, was created in 1905 it included in addition to the astronomical functions, a Geophysics Unit organized into Seismology, Terrestrial Magnetism and Gravity Sections. During the next 65 years the Observatory expanded the scope and stature of its activities with its headquarters on the grounds of the Central Experimental Farm in Ottawa, a smaller observatory and laboratories in Victoria, B.C. and various smaller observatories, including facilities for monitoring earthquakes and Earth's magnetic field, in various parts of Canada. In 1970 responsibility for astronomy was transferred to the National Research Council and the geophysical activities, which remained with the Department of Energy, Mines and Resources, were reorganized as the Earth Physics Branch with headquarters at the old Dominion Observatory in Ottawa.

The Geological Survey of Canada has been in existence for nearly 150 years. It predates Canadian Confederation by a quarter of a century. Originally it was responsible for an area limited to the southern parts of present-day Ontario and Quebec; but by the late nineteenth century the size of its area of responsibility had expanded ten-fold; and as Canada began to exercise jurisdiction over its offshore territory in the second half of this century the area of the territory for which the GSC was responsible again nearly doubled. The organization of the GSC has been changed many times during its long history. Some changes were initiated from within; others originated from outside, in response for example to changes in the defined mandate of the GSC, in the roles of governments in Canada, and the organization of the Government of Canada into departments and agencies.

The mandate given to Sir William Logan in 1842 was to make an accurate and complete geological survey of the Province of Canada and a full and scientific description of its rocks, soils and minerals, accompanied by maps, diagrams and drawings, and to collect specimens. The GSC was founded to provide scientific information and advice required by the Province of Canada, and to stimulate a fledgling mining industry, and thus the economy of the province. Funding of the organization was justified on the basis of the

"public good" nature of the information that would be obtained. In 1986 as in 1842 the activities of the Survey are still closely linked to the "public good". The role of the GSC is still to provide a full and scientific description of the "geology" of Canada to meet the needs of the Government of Canada and, as prescribed by the Government of Canada, the needs of the Canadian economy and the people of Canada; but the term "geology" now includes a much more comprehensive and complex array of specialized scientific fields.

The organizational structure of the Geological Survey of Canada, and its position within the organization of the Government, has always been the outward expression of the nature and scope of its mission. From 1879 to 1889 the organization was called the Geological and Natural History Survey of Canada to reflect the emphasis being given not only to "rocks, soils and minerals" but to zoology, botany, ethnology and anthropology. From 1890 to 1907 it was the Department of the Geological Survey reflecting the importance of the various activities of the Survey to Canada's rapidly expanding economy. Further changes reflecting new mandates saw the transformation of this department into the Department of Mines (1907), the Department of Mines and Resources (1936), Mines and Technical Surveys (1950) and Energy, Mines and Resources (1966). The GSC occupied various slots in these departments and was itself arranged in various ways. For example in 1951 the Branch comprised 7 units – Regional Geology, Paleontology, Mineralogy, Radioactivity and Geophysics, Pleistocene and Engineering Geology, Fuels Resources and Geological Cartography whereas in 1966 there were five – Regional Geology, Fuels and Stratigraphy, Economic Geology, Geophysics, and Petrological Sciences with various support services and regional offices. At various times during its history the GSC spawned numerous other agencies including: the National Museum, the Surveys and Mapping Branch, the Mines Branch which was the parent of CANMET, and the Canada Centre for Remote Sensing.

The reorganization of the Survey announced on 15 January 1986 reflects several of the conditions that triggered past reorganizations. The amalgamation of the Earth Physics Branch and the Geological Survey was a decision of the Government in response to one of the recommendations contained in the Study Team Report on Major Surveys to the Task Force on Program Review chaired by the Deputy Prime Minister, the Honourable Erik Nielsen. This recommended the termination of the Geothermal Program of the Earth Physics Branch and the amalgamation of the remaining EPB activities with those of the Geological Survey to reduce the potential for duplication of geophysical activities, to reinforce scientific programs and to achieve economies of scale. The order to merge the two Branches included direction to effect a 10 per cent reduction in the 1985-86 resources of Earth Physics Branch, to effect the merger on 1 April 1986 and to establish four multidisciplinary regional divisions.

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The "new" Geological Survey was born on 1 April 1986; but it did not spring fully grown into the world. The organization proposed in January was the starting point. Consultations and discussions during February and March, involving many people inside and outside the GSC and EPB, led to the organizational structure implemented on April 1st. Few changes were planned for the roles of the Atlantic Geoscience Centre and the Institute of Sedimentary and Petroleum Geology and the main anticipated effect of the merger for those units was to strengthen existing geophysical linkages in the case of the former and to facilitate a multidisciplinary group approach to basin studies in the latter. For other units the changes were more significant, and reflected advice obtained from the staff through internal committees, working groups and one-to-one discussions between directors and staff. Some discussions went far beyond the two branches concerned. The concerns expressed by the academic community with the disappearance of a federal government agency whose very name identified it with geophysical research, and the concerns of the mineral exploration industry that applied geochemistry and geophysics might be given less emphasis have been particularly noteworthy because of the close cooperation with the academic community and the mineral exploration industry.

The birth of the new was accompanied by regret at the passing of the old. The two most obvious changes have been the disappearance of the Earth Physics Branch and the Resource Geophysics and Geochemistry Division of the Geological Survey of Canada.

The objective of the "new" Geological Survey of Canada is to ensure the availability of comprehensive geological, geophysical and geochemical knowledge, technology and expertise concerning the Canadian landmass and offshore areas, including the mineral and energy resources and the conditions affecting land and seabed use, as required for effective exploitation of mineral and energy resources, estimation of the resource base of Canada, land use, public safety and security, and formulation of policies.

THE ORGANIZATION

The "new" Geological Survey of Canada has an authorized strength of nearly 1000 and comprises eight divisions, three less than existed in the two branches prior to the amalgamation. The Geothermal Energy Program has been eliminated, but there has been no reduction in the overall strength of the scientific program because scientific expertise in geothermics plays a fundamental role in multidisciplinary teams charged with studies of sedimentary basins, the nature and evolution of the lithosphere, and permafrost and gas hydrates. The reorganization has provided new opportunities for bringing together, within individual divisions, certain complementary scientific disciplines that had previously been managed separately; and for coordinating activities between and among divisions.

The eight divisions comprising the "new" Geological Survey of Canada are: Atlantic Geoscience, Geophysics, Geoscience Information, Lithosphere and Canadian Shield, Mineral Resources, Terrain Sciences, Sedimentary and Petroleum Geology, and Cordilleran and Pacific Margin. The Director General's Office in Ottawa includes the Deputy Director General (who is responsible for Program and Planning, Administrative Services, Frontier Geoscience Program, Mineral Development Program, Office of Energy Research and Development and for Special Projects and Grants), the Chief Geophysicist, the Director of New Technology and International Programs, and the Scientific Executive Officer.

The responsibilities and objectives of some divisions remain relatively unchanged but others, as their names suggest, have new or enhanced responsibilities.

ATLANTIC GEOSCIENCE

Composition: unchanged (approx. 122 person-years)

Responsibilities: geological, geophysical and geochemical studies in the Atlantic and Arctic offshore areas to assist in the search for hydrocarbon resources and resource evaluations, in protection of the marine environment and in improving the safety of coastal and offshore engineering structures.

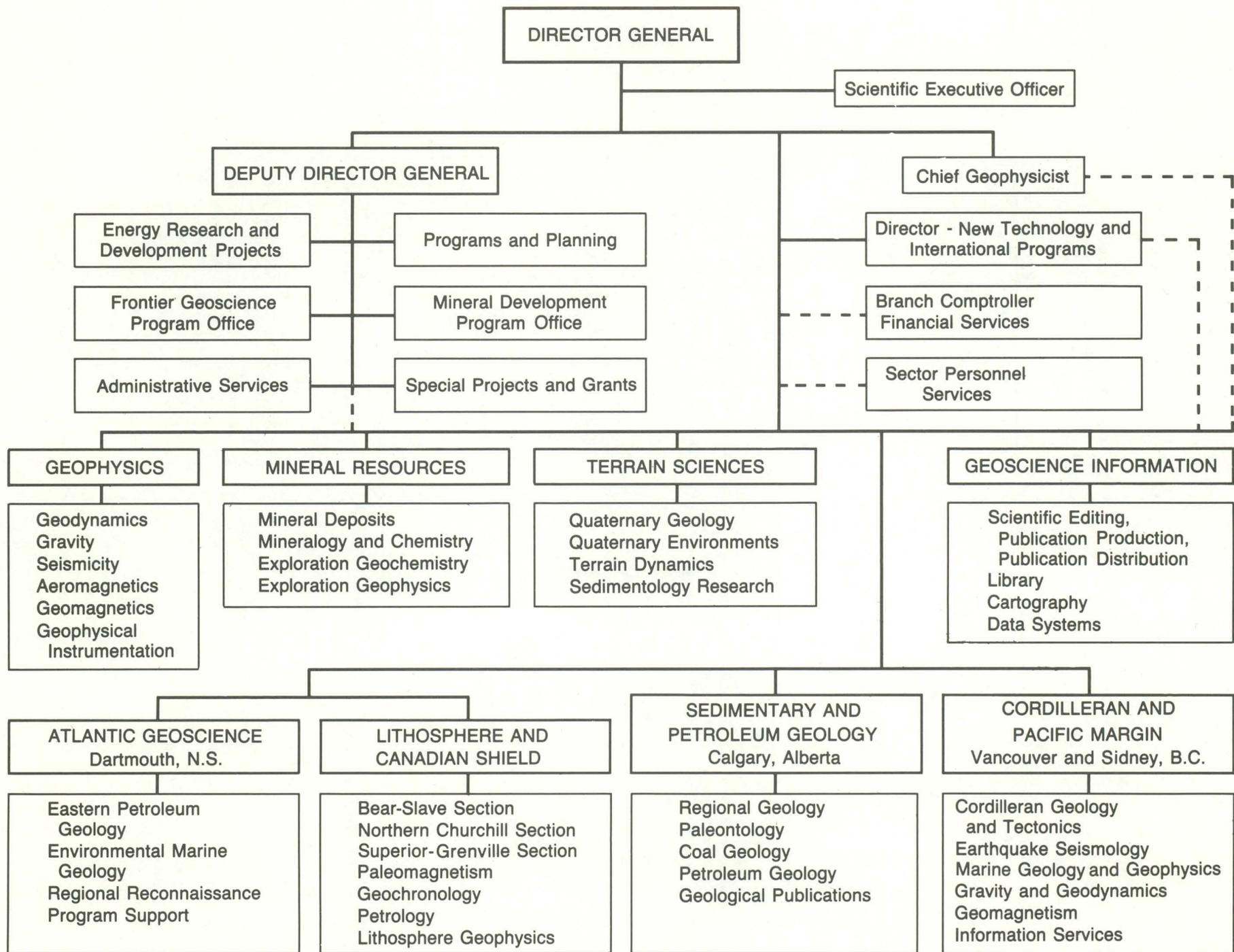
Organization: five subdivisions - Administration, Eastern Petroleum Geology, Environmental Marine Geology, Regional Reconnaissance, and Program Support.

GEOPHYSICS

Composition: Parts of the Seismology and Geomagnetism Division and the Gravity, Geothermics and Geodynamics Division of Earth Physics Branch together with most of the Regional Geophysics Subdivision (Aeromagnetic Surveys) of Resource Geophysics and Geochemistry Division of GSC (approx. 115 person-years).

Responsibilities: physics of the solid earth with special reference to the large-scale structure of the lithosphere-asthenosphere system in Canada; seismicity and seismic risk; national seismological geomagnetic and geodynamic observatory networks; national gravity and aeromagnetic mapping programs; national geophysical databases and methodology for manipulation and display.

Organization: Geodynamics Program, Gravity Program, Seismicity Program, Aeromagnetics Program, Geomagnetic Program; in addition special studies and geophysical instrumentation.



GEOSCIENCE INFORMATION

Composition: Essentially unchanged. Two positions have been transferred to this division from Earth Physics Branch and will be used by Library Services to support the Geophysics Collection (97 person-years).

Responsibilities: to ensure that results of Branch scientific programs are made available to users in a timely and cost effective manner; to maintain the GSC Library as the geoscience component of the National Library; to manage GEOSCAN, the federal/provincial/industry geoscience bibliographic database; to coordinate Branch informatics applications and provide advice on data systems.

Organization: four sections; Scientific Editing and Publication Production and Distribution; Library Services; Cartographic Services; Data Systems.

LITHOSPHERE AND CANADIAN SHIELD

Composition: The former Precambrian Geology Division of GSC, the Crustal Structure Group of the former Seismology and Geomagnetism Division of EPB, part of the Crustal Studies Group of the former Gravity, Geothermics and Geodynamics Division of EPB, and the Aeromagnetic Interpretation Section of the former Resource Geophysics and Geochemistry Division of GSC (approx. 108 person-years).

Responsibilities: the composition, structure and evolution of the Canadian lithosphere as exposed in the Canadian Shield and represented in the subsurface beneath the sedimentary rocks; geochronology; paleomagnetism; igneous and metamorphic petrology.

Organization: three regional-interest sections, four sections concerned with nation-wide studies and a Special Project Group with advisory and national responsibilities: Bear-Slave, Northern Churchill and Superior-Grenville sections; Paleomagnetism, Geochronology, Petrology and Lithosphere Geophysics sections.

MINERAL RESOURCES

Composition: the Resource Geophysics and Resource Geochemistry Subdivisions of the former GSC Resource Geophysics and Geochemistry Division, and the former GSC Economic Geology and Mineralogy Division (approx. 166 person-years).

Responsibilities: research on the formation of mineral deposits and their relationships to Canada's principal geological regions; development of guidelines to assist mineral exploration and resource management and land-use planning; provision of analytical and mineralogical services to support Branch programs; curation of national mineral and ore

research collections; research on geochemical processes and development, application and evaluation of methods to assist in mineral exploration and resource assessments; development and application of mathematical and statistical methods for geoscience data; development, application and evaluation of geophysical methods to assist in mineral exploration and geological mapping.

Organization: four subdivisions: Mineral Deposits, Mineralogy and Chemistry, Exploration Geochemistry, Exploration Geophysics.

TERRAIN SCIENCES

Composition: The former Terrain Sciences Division of GSC, the Terrain Geophysics Section of the former Resource Geophysics and Geochemistry Division of GSC, the Permafrost Research Group from Gravity, Geothermics and Geodynamics Division of EPB and the Glaciology Section from Polar Continental Shelf Project (approx. 97 person-years).

Responsibilities: to provide geoscientific data and interpretive information on the surficial geology and geomorphic processes of the Canadian landmass and for geotechnical aspects of surficial and bedrock materials that have a bearing on the use of the terrain.

Organization: three subdivisions: Quaternary, Quaternary Environments, Terrain Dynamics, and a Sedimentology Research unit.

SEDIMENTARY AND PETROLEUM GEOLOGY

Composition: unchanged except for additional expertise in geothermics for basin studies (approx. 166 person-years).

Responsibilities: conduct of mapping and topical studies to establish the geoscience base for the sedimentary basins of western and Arctic Canada; evaluation programs for petroleum and coal resources.

Organization: six subdivisions - Regional Geology, Paleontology, Coal Geology, Petroleum Geology, Geological Publications, Administration.

CORDILLERAN AND PACIFIC MARGIN

Composition: former Cordilleran Geology Division of GSC (Vancouver) including the Marine Geology Subdivision (Pacific Geoscience Centre, Sidney, B.C.) and Pacific Geophysics Division (Sidney, B.C.) of former EPB. Until reorganization is complete the Director, Cordilleran Geology Division and the Director, Pacific Geophysics Division report to Director General (approx. 75 person-years).

Responsibilities: Seismology of Cordilleran and Offshore regions to assist in identification, elucidation and mitigation of earthquake hazards; studies in neotectonics; nature, origin and evolution of the lithosphere of the Cordilleran and Offshore regions and their mineral and hydrocarbon resources; assessment of volcanic and terrain hazards to facilitate land-use planning and development.

Organization: six units — Cordilleran Geology and Tectonics, Earthquake Seismology, Marine Geology and Geophysics, Gravity and Geodynamics, Geomagnetism, Information Services.

THE FUTURE

The past few months have seen a flurry of announcements concerning reductions in Government spending and downsizing in the Public Service. Many of these mark the implementation of decisions arising from the Ministerial Task Force on Program Review. It would be naive to think that the Geological Survey of Canada like some supertanker can negotiate unperturbed the present stormy seas. Indeed perhaps like the owners of a supertanker one of our tasks must be to make sure that our products are saleable and that our vessel has not outlived its usefulness and become a candidate for the scrapheap.

In coming months we will face several formidable challenges arising from the implementation of government decisions, and will have to respond promptly and efficiently, particularly to those arising from the recommendations of the Major Surveys Study Team. As you may know Dr. W.W. Hutchison, ADM Earth Sciences was seconded in January to be Assistant Secretary, Major Surveys Implementation Secretariat in the Ministry of State for Science and Technology. This group has responsibility for reviewing and providing advice on the implementation of the Cabinet decision that the Minister of State for Science and Technology co-ordinate efforts to improve in-house survey activities and develop guidelines for the efficient

collection, maintenance and dissemination of federal survey-based data. In this study due consideration is to be given to the role already played by the provinces and the private sector and to ways and means of enhancing this role. The report required by Cabinet by 31 December 1986 will undoubtedly include many things that will affect our role, thus it is essential for the GSC to provide, in the short time available, thorough evaluations of the issues. To meet this need all the staff of the Director General's office are being brought together in adjacent office spaces. The augmented staff will comprise Dr. J.G. Tanner, Chief Geophysicist, Dr. A.G. Darnley, Director, New Technology and International Programs, Dr. Adrian Camfield who joins Dr. Benson as Program Officer and Dr. Robin Riddihough, the Branch Scientific Executive Officer following Dr. Maxwell's retirement.

The future holds many challenges. In the past few years we have seen our resources nearly doubled not by direct increases to our core program budgets but by access to new programs such as the Federal-Provincial Mineral Development Agreements, Frontier Geoscience Program, Offshore Boundaries Program and the Energy Research and Development projects. These require a different approach both on the part of management and on the part of the scientific staff. We have been developing expertise in handling externally funded activities since at least 1972 when the Environmental Social Program — Northern Pipelines gave Terrain Sciences Division the chance to map large parts of the Mackenzie Valley that would have been inaccessible to us using regular budget resources.

The "new" Geological Survey of Canada brings together most of geology's many disciplines and thus is an organization that can respond to the challenges of the future including the benefits that will accrue from co-operative multidisciplinary programs. The GSC has played a leadership role in many fields in the past; and it now includes many strong research teams. The future may be uncertain but the GSC is well-placed to move forward. Our history shows that we have successfully met many challenges before — I am sure that the future will be no different.

May 15, 1986
Ottawa

R.A. Price
Director General
Geological Survey of Canada

