

Each year the GSC sends about 100 parties into various parts of Canada. The results of its studies are published in memoirs, bulletins, papers, maps and scientific technical journals. Its headquarters is in Ottawa and of several regional offices the largest are the Institute of Sedimentary and Petroleum Geology in Calgary and the Atlantic Geoscience Centre in Dartmouth. The former studies the geology of Canada's western and northern sedimentary basins and the latter investigates the bottom morphology and structure of the continental shelves and the floors of the open ocean. A smaller group of geologists on the west coast is developing similar marine-geology studies there.

The Earth Physics Branch carries out geophysical work of interest to the mineral industry. It collects and publishes maps and charts on the geomagnetic field in Canada. Most of this information is obtained from airborne geomagnetic surveys which have ranged over all of Canada and as far as Scandinavia. The branch maintains a network of 11 permanent magnetic observatories, including the Automatic Magnetic Observatory System at Yellowknife which began operating in 1974. It also operates a network of 33 seismic stations for the study of the earth's interior and to assess seismic risk. In gravity research, another means of studying the composition of the earth's crust, the branch maps variations in the earth's gravity on a regional basis including the Arctic and the continental shelves. The results of all gravity measurements are available in a new gravity map of Canada on a scale of 1:5,000,000 or about 80 miles to the inch (50.7 km to the cm), for easy comparison with the new geological and tectonic maps of Canada on a similar scale. Geothermal studies in mines and deep boreholes provide information to the mineral industry on the underground thermal regime, including permafrost.

No mineral development is possible without accurate, large-scale topographical maps. The Surveys and Mapping Branch has completed the topographical mapping of the country at the medium scale of 1:250,000, or about four miles to the inch (2.5 km to the cm). About 40% of the larger-scale mapping at 1:50,000 has been completed of more settled areas and those of greater economic importance. Also available for selected areas are maps at other scales. Another branch function is the establishment of a basic network of survey control points across Canada that provide precise figures of latitude, longitude and elevation above sea level. In addition to its topographic maps, the branch produces various multicoloured maps for other government agencies, aeronautical charts and the National Atlas of Canada, which describes Canada's physical, economic and social geography. The branch's National Air Photo Library has on file over 4 million aerial photographs of Canada, in black and white, and colour, taken over the last half-century from aircraft and more recently from the Earth Resources Technology Satellite (ERTS) and Skylab.

The Explosives Branch is responsible for the administration of the Canada Explosives Act, which controls the manufacture, authorization, storage, sale, importation and transportation by road of explosives.

The Mineral Development Sector is responsible for research programs and policies in the field of non-renewable resources. It conducts fundamental and applied resource-engineering-economic research and field investigation into non-renewable resource problems on a total industry basis, in a regional, national and international context. The work covers all aspects of the mineral industry from resource to consumption. The sector publishes resource-engineering-economic reports and advises government departments and agencies on non-renewable resource policy. Current activities include regional studies of the mineral economy in Canada; assessment of mineral projects for which federal support has been requested; resource and reserve studies in a number of mineral commodities; and the safeguarding of Canadian mineral interests through participation in the work of international agencies. The sector administered the Emergency Gold Mining Assistance Act to aid mining communities largely dependent upon the gold mines. In collaboration with the Canadian International