mcgill's magnet laboratory

Magnetic fields one million times greater than that of the earth can be created in this unique research laboratory. It will be an invaluable modern tool for research in solid state physics

Grants totalling $651,000 have been awarded by the National Research Council of Canada to McGill University to assist that institution to build the world's most powerful research magnet.

The magnet, housed in a new Magnet Laboratory at Longueuil on Montreal's south shore, will be used to study the properties of materials in high magnetic fields, and for the development of magnet and cryogenic (low temperature) technology.

This radical and unique research laboratory, built at a total cost of more than $900,000, was designed by Dr. Richard Stevenson, Professor of Physics at McGill. Dr. Stevenson will act as Director of the laboratory.

Financial support also was received by the University from Canadian Liquid Air Limited which designed and built the cryogenic equipment, and from Dr. W. B. Lewis, Senior Vice-President of Atomic Energy of Canada Limited. Dr. Lewis donated the $32,500 he won as a U.S. Atoms for Peace Award.

NRC's support was made up of a number of negotiated grants awarded over a four-year period, including one of $287,000 for the 1969-70 fiscal year. The Council also has granted the University $67,000 to operate the facility in the 1969-70 fiscal year, bringing operating grants awarded so far to $121,000.

The main magnet in the laboratory creates a magnetic field 1,000,000 times greater than that of the earth, yet is only the size of a kitchen stove. It will enable scientists to study properties of solids in magnetic fields of 250,000 Oersted (Oe) – the unit of magnetic field named after a Danish scientist who worked in this area during the time of Napoleon. By comparison, the earth's magnetic field is about ¼ Oe.

In this magnet the powerful magnetic field is produced in a hollow core 40 millimetres in diameter. A second magnet produces a magnetic field of about 105,000 Oe in a core 60 millimetres in diameter and a third pulsed field magnet produces fields up to 700,000 Oe for times in the order of 100 microseconds in working spaces of about one eighth of an inch in diameter.

The magnetic field of a solenoid or electromagnet depends only on its current and the field can be produced equally well at low or high temperatures. However, a room temperature magnet requires a very large electric power supply and a water cooling system and such an investment runs into

The Magnet Laboratory is located in the Industrial Park of Longueuil on the Montreal south shore.

Dans ce bâtiment, à Longueuil, P.Q., se trouve le plus puissant aimant de recherche du monde.