Document generated on 10/12/2024 4:17 a.m.

Geoscience Canada

Canadian Continental Drilling Program

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Volume 14, Number 2, June 1987

URI: https://id.erudit.org/iderudit/geocan14_2art02

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Publisher(s)

The Geological Association of Canada

ISSN

0315-0941 (print)
1911-4850 (digital)

Explore this journal

Cite this article

Hall, J. M. & Drury, M. J. (1987). Canadian Continental Drilling Program. *Geoscience Canada*, *14*(2), 82–82.

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Canadian Continental Drilling Program

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What is the CCDP?

The Canadian Continental Drilling Program (CCDP) is a major new geoscience project designed to provide information on the Canadian landmass that can only be obtained through borehole drilling. It will serve the interests of industry, governments and fundamental geoscience through a program of dedicated drilling, add-on drilling and the use of holes of opportunity.

Canada's diverse geology includes fold belts, active and passive continental margins, deep sedimentary basins and a significant proportion of the world's greenstone belts. We have some of the world's oldest rocks, and some of the youngest. We have tremendous geoscience expertise, both industrial and scientific. We have significant reserves of hydrocarbons and we produce considerable quantities of most of the base and precious metals required by a rapidly developing world.

Yet we have barely scratched the surface of our vast landmass in our attempts to understand the geological and tectonic processes that produced our natural resources. LITHOPROBE is already providing information that will enhance our understanding of fundamental tectonic structures. Ultimately, however, there is only one way to determine and fully understand what lies beneath the Earth's surface — to drill into it.

Several countries (USA, USSR, West Germany, France) have three major national geoscience programs: deep geophysical profiling, ocean drilling and continental drilling. In Canada, with LITHOPROBE, for deep seismic and other geophysical sounding, and the Ocean Drilling Program already under way, it is time to develop a continental drilling program.

Background

In February 1986, a three-day meeting was held in Ottawa to gauge the interest of the national geoscience community in a continental drilling program. The 180 representatives of industry, governments and the universities who attended made it clear that there is widespread interest. A national committee was subsequently formed to ensure that the momentum gained was not lost.

Now formally constituted with the support of the Canadian Geoscience Council, the Steering Committee of CCDP is under the chairmanship of Dr. James M. Hall, Dalhousie University. Funding is being secured to support the activities of a Planning Group, and, thanks to the generous assistance of the Geological Survey of Canada and the Department of Geology at Carleton University, Ottawa, an office has been opened at Carleton, headed by Dr. Malcolm J. Drury, Planning Office Co-ordinator. Planning has now begun for an initial five-year scientific program that will concentrate on projects making use of shallow and intermediate drilling, add-on drilling and holes of opportunity. During the planning process, funding will be sought for the scientific program.

The potential for involvement of geoscientists at all levels of experience and of diverse backgrounds in problems in the earth sciences will provide an exciting environment for interdisciplinary studies.

Some potential drilling-based investigations

Among the problems identified at the February 1986 meeting are:

(i) *greenstone belts* - to determine their tectonic setting and resolve the apparent contradiction between stratigraphic and geophysical estimates of their thickness, and examine processes of hydrothermal circulation and mineralization;

(ii) *the Sudbury structure* - examine its nature and the controls on mineralization;

(iii) *sedimentary basins* - determine the nature of basement, its thermal state and its control on fluid flow, and recover key stratigraphic sections such as the Cretaceous-Tertiary boundary;

(iv) *granites* - study the structure and thickness of granitic intrusions and their association with mineralization and major shear zones;

(v) *continental crust at depth* - directly observe the deep continental crust in areas where it is uplifted, *e.g.* the Kapuskasing Structural Zone;

(vi) *tectonic phenomena* - study key structures relating to the construction, history and mechanisms of continental accretion.

By no means exhaustive, this list serves to indicate the wide range of geological problems that could be addressed by drilling.

Call for proposals

The first five-year phase of the CCDP is anticipated to begin by 1989-1990. Proposals for drilling-based projects are therefore solicited from all members of the Canadian geoscience community. Proposals should be conceptual at this stage, and so need not contain exhaustive documentation on logistical details, but they should clearly explain the scientific objectives and the potential benefits, and should address the following points:

- names and affiliations of individuals, and a designated spokesperson;
- purpose and nature of proposed project: *i.e.* what geological question is it designed to address, how many holes will be required and to what depth;
- what complementary investigations are anticipated or needed;
- what complementary information (geological, geophysical, etc.) already exists;
- what special techniques will be involved;
- relationships, if any, with other geoscience programs.

Two copies of each proposal should be sent to:

Dr. Malcolm J. Drury
Co-ordinator, CCDP Planning Office
Department of Geology
Carleton University
Ottawa, Ontario K1S 5B6
(Telephone: 613-564-7522)

Proposals should be submitted by 31 October 1987 for consideration in Phase 1. Following that date, the Planning Group will begin to compile proposals received, estimate the costs and time involved for their completion, and report to the Steering Committee. Provision will be made for incorporating further proposals beyond the deadline if they are based on new scientific results from other projects. It is anticipated that a series of workshops will follow, at which proponents will be invited to develop their proposals in greater detail. A co-ordinated Phase 1 Proposal will then be prepared for consideration by the geoscience community and funding agencies. During Phase 1, proposals will continue to be solicited for Phase 2, anticipated to begin in 1994.

Further information can be obtained from the addresses given above.

Accepted, as revised, 26 March 1987.