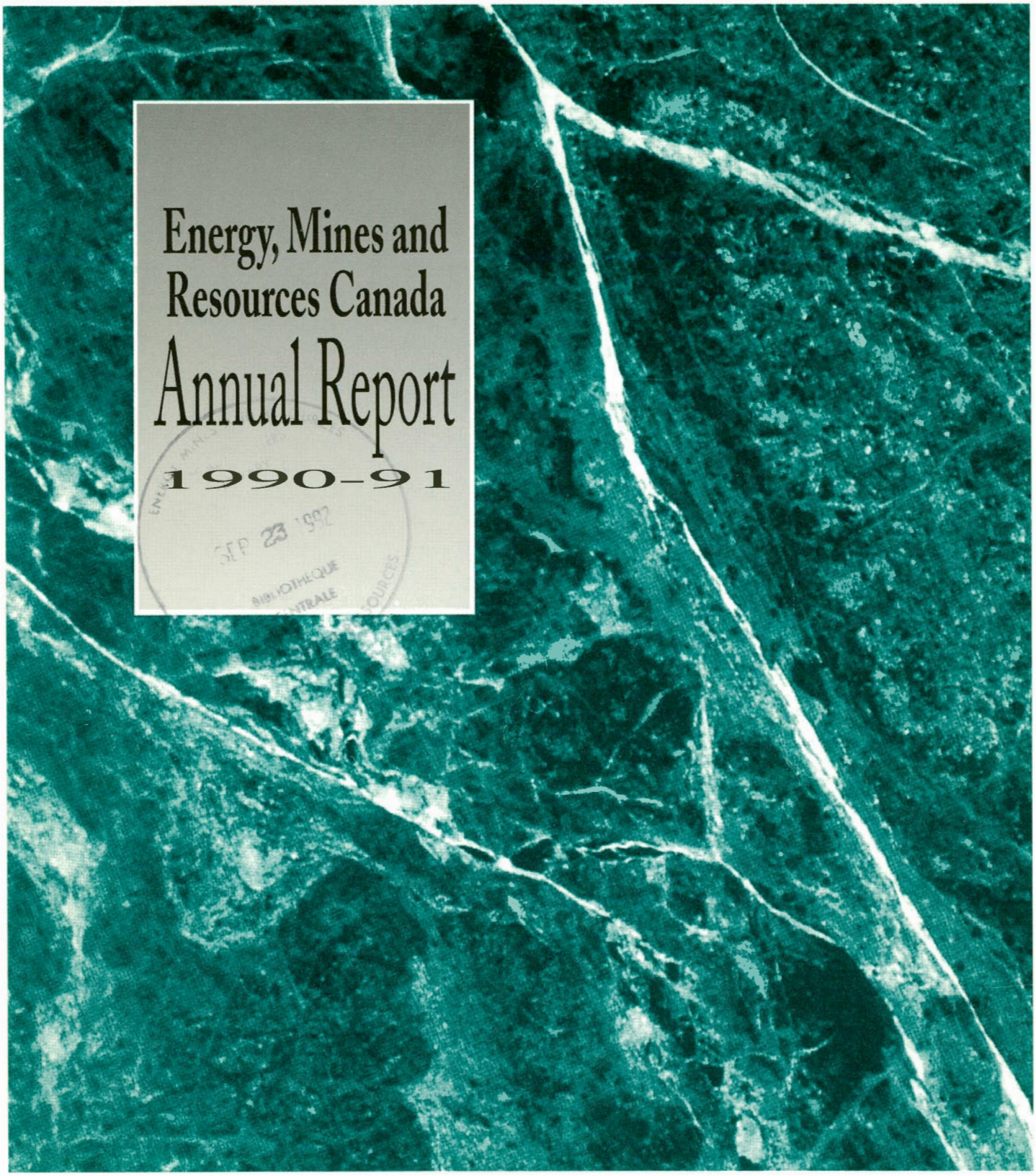

Energy, Mines and Resources Canada

Annual Report

1990-91

Energy, Mines and Resources Canada
Hon. Jake Epp, Minister

Énergie, Mines et Ressources Canada
L'hon. Jake Epp, Ministre

Canada

THE ENERGY OF OUR RESOURCES

THE POWER OF OUR IDEAS

LETTER FROM THE MINISTER

His Excellency the Right Honourable Ramon Hnatyshyn P.C., C.C., C.M.M., C.D., Q.C., Governor General and Commander-in-Chief of Canada.

Your Excellency:

I have the honour to present the Annual Report for the Department of Energy, Mines and Resources for the fiscal year ending March 31, 1991.

I remain Your Excellency's obedient servant.

Jake Epp
Minister of Energy, Mines and Resources

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Overview

Introduction

Energy, Mines and Resources is a scientific and economic department concerned primarily with Canada's landmass and the non-renewable resources it contains.

Throughout Canada, the department's 4,000 employees work to promote:

- international competitiveness of client industries
- environmental quality
- economic equity and fairness
- health and safety in the mineral and energy industries
- security of supply of mineral and energy commodities
- regional development
- Canada's sovereignty

Mandate

Under the provisions of the *Department of Energy, Mines and Resources Act*, the *Resources and Technical Surveys Act*, the *Explosives Act*, and various acts and regulations governing the public service, the Minister of Energy, Mines and Resources is responsible for coordinating, promoting and recommending national policies concerning energy, mines, minerals and other resources, and formulating plans for their conservation, development and use.

In addition, the Minister is authorized to conduct research and technical surveys to assess mineral and energy resources, including a full, scientific examination and survey of Canada's geological structure and legal boundaries; to prepare and publish maps; to conduct scientific and economic research relating to the energy, mining and metallurgical industries; and, to establish and operate scientific laboratories to perform these duties.

Program Objective

The Energy, Mines and Resources program advances the development of Canada's economy in a manner consistent with federal environmental and social objectives by contributing to the timely, efficient development and use of Canada's mineral and energy resources, and by augmenting knowledge and understanding of the Canadian landmass.

Organization

Energy, Mines and Resources Canada is made up of nine sectors:

- Geological Survey of Canada
- Surveys, Mapping and Remote Sensing
- Mineral and Energy Technology
- Mineral Policy
- Energy
- Canada Oil and Gas Lands Administration
- Corporate Policy and Communications
- Finance and Administration
- Human Resources

The events contained in this report represent only some of the Department of Energy, Mines and Resources' highlights for 1990-91. More information is contained in Part III of the department's Main Estimates.

Science and Technology

Geological Survey of Canada (GSC)

National Geoscience Mapping Program (NATMAP): NATMAP brings together Canadian geoscience expertise from government, industry and universities to improve the quality and completeness of bedrock and surficial geological mapping programs in Canada. It began in 1990-91 with a successful pilot project in which geological data was entered directly into computers in the field for subsequent use in producing computer-generated geological maps.

Aeromagnetic Joint Surveys: In 1990-91, the GSC and a private-sector consortium completed the first phase of a three-year, cost-sharing program to obtain high-resolution aeromagnetic survey data for southern Alberta.

Exploration Science and Technology (EXTECH): In 1990-91, the multi-disciplinary EXTECH initiative contributed significantly to private-sector exploration in northern Manitoba, with detailed geological mapping in the vicinity of the Ruttan Mine that identified rocks similar to those of the mineralized horizon 2 km north-east of the known deposit.

Beaufort Sea: The GSC completed the first year of the environmental analysis of the Beaufort Sea's complex coastal zone with funding from the Northern Oil and Gas Action Plan (NOGAP).

Polar Continental Shelf Project (PCSP): Every year, PCSP helps approximately 300 groups of scientists and others conduct safe, efficient Arctic research. It provides logistics advice and support free to federal representatives and on a cost-recovery basis to others. PCSP also provides information on scientific operations in the Arctic to departmental clients, local residents and the general public.

Surveys, Mapping and Remote Sensing

New Life for Canada Lands Surveying (CLS) System: In 1990-91, the CLS System launched an ambitious revitalization and modernization program. The program ensures that property boundaries are properly identified both in legal descriptions and on the ground, facilitates development of Canada Lands and protects Crown interests. As part of the modernization project, the division continued to devote significant resources to developing and implementing the Automated Canada Lands Information System (ACLIS).

Surveys for the Inuvialuit Native Land Claim: Work continued on surveys for the Inuvialuit Native land claim in the Northwest Territories. The basic control survey fabric was completed and detailed boundary surveys continue.

Geographic Information Technology Development Program (GITDP): Under this five-year program, federal and provincial governments work together, thereby reducing costs and duplication of effort, to develop geographical information databases and technology. In 1990-91, GITDP entered its second year.

Radar Data Development Program: The ground systems to receive and process data from future satellites, such as the European Space Agency's ERS-1 to be launched in 1991, were installed in 1990-91 at the Prince Albert and Gatineau stations. In addition, the department transferred data and products from the LANDSAT and SPOT satellites to private industry. In the airborne program, the Convair 580 aircraft flew 417 hours, more than 100 of which were leased to the private sector. All provinces participated in radar applications development projects. In 1990-91, the focus of the Radar Data Development Program shifted from basic applications research to the development of resources and environmental information models.

Mineral and Energy Technology

Mining and Explosives Research: The Mining Research Laboratories develop and transfer technologies to improve Canadian mining operations. Among the 1990-91 highlights were the completion of the negotiations to purchase the Val d'Or Quebec site for the new Experimental Mine, and the development by the Canada Centre for Mineral and Energy Technology (CANMET) and Nanisivik Mines Ltd. of pillar recovery strategies compatible with permafrost Arctic mining environments.

Coal and Oil Sands Mining and Preparation: In 1990-91, CANMET's Western Research Centre in Alberta, Alberta Energy and Luscar Sterco Ltd. completed a preliminary laboratory investigation of electrocoagulation of coal washery fines. While the process has environmental advantages over other current technologies for effluent treatment, it is not yet economically feasible.

Mineral Processing: The Mineral Sciences Laboratories (MSL) conducted a variety of studies aimed at preventing the oxidation of sulphide minerals and mitigating the impact of acidic drainage, one of the mining industry's most serious environmental problems. MSL is a major participant and acts as the secretariat for the Mine Environment Neutral Drainage (MEND) program, a five-year, federal/provincial/ industrial project to develop technologies to prevent and control the multi-billion-dollar problem of mine waste disposal.

Fuels Technology: In 1990-91, the Energy Research Laboratory (ERL) and Petro-Canada conducted a successful pilot project demonstrating a new, more cost-effective processing scheme that integrates primary hydrocracking and secondary hydrotreating processes. ERL also formed an international R&D consortium to develop coal-heavy oil coprocessing, a new process to produce clean synthetic crude oil compatible with existing fuel markets, and worked on developing the engineering database needed for commercialization. ERL also designed a coal combustion research facility for the Chinese Ministry of Energy's Thermal Power Institute in Xian. A Chinese scientific delegation chose CANMET because of its international reputation in coal combustion research and environmental control technology.

Metals and Materials: In 1990-91, the Metals Technology Laboratories (MTL) and Alcan International Ltd. explored the use of metallizing treatments to protect steel under simulated Arctic water conditions. This will help protect marine vessels and offshore structures from saltwater corrosion, a problem compounded in Arctic

conditions where ice abrasion is also a factor. Another MTL highlight was its work with Beaver Dental Inc. to develop a technique to produce higher-quality dental drill bits.

Efficiency and Alternative Energy: In 1990-91, General Electric Canada Inc., under a cost-sharing program with CANMET, developed a new line of large AC synchronous motors featuring the world standard in energy efficiency. In addition, the first commercial biomass fast pyrolysis unit (100 kg/h) to produce specialty chemicals was built.

Economic Development

Mineral Policy

Mineral Development Agreements: In 1990-91, the department continued to negotiate and co-manage Mineral Development Agreements introduced in 1984 to stimulate mineral and regional development.

Two Assistance Programs Terminated: Two industry-assistance programs — the Canadian Exploration and Development Incentive Program and the Canadian Exploration Incentive Program — were terminated in the 1989 and 1990 budgets, respectively. Grandfathering arrangements for both programs extended into 1990-91 and were completed.

National Mines Accident Data Base: The Mineral Policy Sector (MPS) continued working with the provinces to expand the National Mines Accident Data Base to permit better analysis of mine accidents and, ultimately, their prevention. By the end of 1990-91, three provinces and one territory had provided data. Discussion on expanding participation continued into 1991-92.

Mineral and Metal Commodities: In terms of mineral and metal commodities, the sector continued its work on the assessment of domestic and international markets for coal and related clean-coal technologies; efforts to prevent regulatory actions which could restrict recycling at the international and domestic levels; national and international initiatives for the controlled use of asbestos; and participation in international organizations including commodity study groups.

Economic and Financial Policy Analysis: MPS continued to devote considerable resources to deal with the tax treatment of mine reclamation funds, flow-through share issues, and sales and excise tax-related issues; to advise the departments of Finance and Revenue on mineral-related tax policy issues; and advise Finance, External Affairs and Investment Canada in support of trade negotiations dealing with the minerals industry.

Energy

Hibernia: The implementing legislation for the Hibernia Development Project was passed in November 1990. Under the terms of the agreement, Canada will provide the project owners with $1.04 billion in contributions and $1.66 billion in loan guarantees from 1990-96.

Energy Policy: The department continued its work to develop an energy policy framework that meets Canadian needs both nationally and internationally. This includes EMR's commitment to work with Environment Canada to develop a domestic and international policy on global warming.

Electricity: In 1990, the department implemented the electricity export policy announced in 1988, continued its assessment of Canada's uranium supply capabilities and export opportunities, and continued to coordinate the government's defence in the lawsuit, *Energy Probe* vs *the Attorney General of Canada*, concerning the *Nuclear Liability Act*.

Siting Task Force on Low-level Radioactive Waste Management: The task force continued its mandate to find a publicly-acceptable location to store the historic wastes currently kept at temporary sites in Ontario's Port Hope area.

R-2000 Energy Efficiency Home: Canada entered into a licensing agreement with Japan to make the internationally-acclaimed R-2000 home available to that country. The agreement will help to promote Canadian exports in technology, products and materials.

***Canada Petroleum Resources Act*:** In consultation with industry representatives and the territorial governments, the sector continued drafting the royalty regulations for the *Canada Petroleum Resources Act* to be promulgated by the end of 1991.

Canada Oil and Gas Lands Administration (COGLA)

In 1990-91, COGLA continued to represent federal interests regarding oil and gas activity on Canada's frontier lands, and to advise the Minister on statutory obligations with respect to frontier lands, particularly the joint offshore oil and gas management regimes with Newfoundland and Nova Scotia.

Administrative Support

Three sectors comprise the Administrative Support activity — Corporate Policy and Communications, Finance and Administration, and Human Resources.

Environmental Assessments: Under the Environmental Assessment and Review Process (EARP), all federal proposals for programs and projects must be evaluated for environmental impacts. In 1990-91, EMR put in place procedures and protocols to ensure that its proposals comply with EARP.

Environmental Audits: In 1990-91, the Corporate Policy and Communications sector developed a departmental policy and accompanying protocol on environmental audits to ensure that all aspects of the department's operations comply with both environmental legislations and internal policies, and respect management practices that maintain and enhance the quality of the environment.

Energy Efficiency: The department established an Energy Efficiency Committee and launched an energy audit of all departmental facilities. The audit culminated in a pilot project for the entire federal government in a venture involving EMR, Public Works Canada and Ontario Hydro.

Letter of Understanding — Official Languages: In August 1990, the department signed a Letter of Understanding with Treasury Board outlining a comprehensive official languages action plan for 1990-93. The department made modest progress in all areas during the first year.

Program Evaluations: EMR conducted five internal audits and evaluations in 1990-91.

ENERDEMO (1985-89), which encouraged faster adoption and commercialization of energy conservation, oil substitution and alternative energy technologies, was found to be successful in energy savings, environmental benefits, speeding up projects, and disseminating information and technology transfer, but limited in technology replication.

The **Canada Centre for Mineral and Energy Technology (CANMET)**, which supports R&D in the mining and energy industries, was found to have unique, highly-regarded facilities, expertise and activities; and to perform important work in encouraging pre-competitive R&D through mechanisms such as consortia agreements. The report highlighted a need for a strong environmental focus.

The study of the **Canadian Exploration and Development Incentive Program** (1987-89), designed to stimulate oil and gas exploration and development, found that the program encouraged incremental investment ranging from $417 million to $612 million, that the incremental impact varied significantly by company size and that the incentives permitted earlier implementation of projects. Program payments as of August 1990 were $965 million for 14,400 oil and gas wells and 3,500 geological programs.

The study of the **Canada Centre for Remote Sensing** concluded that the program was successfully delivering a national remote sensing program. The study also suggested that a systematic approach be developed to identify user needs, that industry assistance be increased and that a more comprehensive strategic plan be prepared.

The evaluation of the **Radar Data Development Program**, a 15-year program to help prepare Canadian clients to use radar remote-sensing data from satellites, confirmed the necessity for the program. The evaluation recommended more involvement on the part of users in developing plans, objectives and selection criteria.

Interdepartmental Evaluation — PERD: In 1990-91, the Interdepartmental Program of Energy Research and Development (PERD), the cornerstone of federal investment in energy R&D other than nuclear fission, was evaluated. On the whole, the program was found to be structured and operating well and achieving its goals. The study recommended more funding for environmental projects and those involving energy usage over supply.