

procedures for animal diseases, the development of wildlife rabies vaccine and studies of the prevention of diseases in high density cow-calf operations.

Agricultural research in Canada is conducted through a network of federal, provincial, university and industrial organizations. About 50% of the work is performed in federal laboratories. The Department of Agriculture, as the focus of this federal involvement, has played an active role in developing the research infrastructure and in establishing cooperative research programs. Through its research agreement program, the department awards about \$1.3 million a year to scientists at Canadian universities. It contributes to the provinces for the expansion of veterinary science teaching facilities at the Universities of Guelph, Montreal and Saskatchewan.

Atomic Energy of Canada Limited

9.2.5

Atomic Energy of Canada Limited (AECL), with an intramural R&D budget of \$79.3 million in 1976-77, is a Crown corporation responsible for nuclear research and utilization. The main research and development centres are Chalk River Nuclear Laboratories, Chalk River, Ont., and Whiteshell Nuclear Research Establishment at Pinawa, Man. These laboratories carry out a full range of activities: underlying research in physics, chemistry, materials science and radiation biology; research and development on advanced nuclear reactors and other nuclear power systems; and research and development to improve current models of nuclear power plants. Three other groups are responsible for utilization: Power Projects, Heavy Water Projects and Commercial Products. They also carry out some development work related to commercial objectives.

The corporation's prime responsibility is to develop nuclear energy technology to meet Canadian requirements. Its objective is to make available by the year 2000 about 80 000 MW of nuclear-electric capacity (one and one half times Canada's present total electric capacity). It also produces radio-isotopes and develops associated products such as radiation processing equipment and radio-therapy instruments for use in medicine and industry.

Applied research and development activities are carried out on power reactor systems, nuclear fuel, environmental protection and radioactive waste management, heavy water production, radiation equipment and radioactive isotopes. The applied work is supported by basic research in physics, chemistry and materials science. In addition, the corporation contracts out over \$6 million of research and development annually to industry. There is close collaboration with utilities and industry since this program provides the technological base for the largest industrial program ever initiated, developed and put into industrial practice by Canadians.

R&D ranges from work at the laboratory bench to experiments using multi-million dollar research reactors and associated facilities. Much of the nuclear power activity involves the CANDU pressurized heavy water system; as well, work is conducted in support of heavy water plants. Particular attention is paid to developing reliability through sound design and good maintenance procedures, so that high capacity factors already achieved (87% for the Pickering generating station in 1976) will continue in the future. A slowly increasing percentage of the work is devoted to the development of new fuel cycles to ensure nuclear fuel supplies adequate for centuries.

AECL activities have led to the development of the unique CANDU system of nuclear power. Its success was marked in 1973 by the completion of the Pickering Nuclear Generating Station, the world's largest operating nuclear station and by the choice of Canadian designs for nuclear power plants planned by Argentina and the Republic of Korea. CANDU reactors are operating in India and Pakistan; Argentina and Korea have placed orders for 600 MW units; other countries, including Denmark, Iran and Romania, have indicated interest. Britain selected the SGHWR concept, which is similar to CANDU, for its next generation nuclear stations and is considering technology exchange with Canada.