Defence Research laboratory to be built in the West

A new laboratory for the Defence Research Board is to be built in Winnipeg at a cost of $11.5 million. Construction, which will begin next year, will be completed in 1977.

The new facilities, to be known as the Defence Research Establishment Manitoba (DREM), will cost about $6 million in annual operating costs.

Some 70 scientists, with a support staff of about 130, will staff the new establishment. Its role, said Defence Minister James Richardson, would include northern operations and advanced research in search-and-rescue methods, as well as improved training techniques. Radar and electronic countermeasures also will be tested.

Several factors led to the Government's decision to locate the new research establishment in Winnipeg, Mr. Richardson said, including the Government's policy of decentralization of industry and the desire to develop an industrially-related electronics capability in Western Canada. Winnipeg's location as a gateway to the North was also a factor.

The Department of Communications is joining in the development of the new facility by moving to Winnipeg its entire program of radar research, presently carried on at the Communications Research Centre in Ottawa.

The move entails transfer of some 30 researchers and about 60 per cent of the roughly $2-million worth of research being conducted annually by the research centre in Ottawa for the Defence Research Board.

The establishment of the new Manitoba laboratory, with its strong communications-research presence, will help to stimulate the growth of high-technology secondary industries in western Canada. Mr. Richardson also said that the requirement for highly-trained personnel would increase employment opportunities for university graduates in Manitoba.

Construction contracts for communications satellite

Communications Minister Gérard Pelletier and Minister of Supply and Services Jean-Pierre Goyer announced recently that Spar Aerospace Products Limited of Toronto and RCA Limited of Montreal had reached agreements with the Department of Supply and Services concerning payment for the last phase of construction of the Communications Technology Satellite (CTS), an experimental spacecraft.

The CTS, to be launched in late 1975 under a joint Canada/United States program, will test both the technology and applications of a new generation of satellites to meet communications needs of the 1980s. Canadian industry, which is building the spacecraft, is gaining valuable experience in design and manufacture of advanced technology satellite subsystems.

Spar Aerospace is supplying the structure of the satellite, its attitude control subsystem and solar power arrays. Since inception of the CTS project in 1970, Spar has completed its contributions to the conceptual, project-development and design stages of the program.

The total price for the current construction phase has now been set at about $12.5 million. Final payments will be determined on the basis of contract provisions which would compensate Spar for superior performance in such areas as weight control, cost reduction and delivery schedules.

RCA Limited, the supplier of the electronics and antennas for the satellite, will be paid about $11 million for the construction phase. As in the case of Spar, the RCA contract contains clauses to provide incentives to reduce costs and control the weight of the hardware being produced.

These agreements will complete the main procurement part of the CTS project. The Government has set a target of some $56 million for the satellite, with about 80 per cent of the total going to Canadian industry. The CTS program is being managed by the Communications Research Centre (CRC) of the Department of Communications. Assembly of the spacecraft, testing and launch preparations will be carried out in 1975 at the CRC near Ottawa and at National Aeronautics and Space Administration (NASA) centres in the United States.

The United States, in addition to supplying the satellite launch, is providing a novel, 200-watt travelling wave tube (TWT). The European Space Research Organization (ESRO) is also participating, by providing two 20-watt TWTs and by sharing the cost of newly-developed solar cell blankets.

New device sees through lead shield

A neutron generator, an instrument that can peer through thick lead shielding and determine amounts of thorium, uranium or plutonium in spent fuel will be installed at Atomic Energy of Canada's Whiteshell Nuclear Research Establishment (WNRE) within the next few months to aid wide-ranging research programs. Its major use will be in the development of automated, non-destructive testing of fissile and fertile materials, to replace costly and time-consuming chemical methods.

The recently-developed technique uses a beam of neutrons to cause fissions in fissile or fertile material. Neutrons and gamma rays produced by the fissioning reveal the quantity and type of material contained in a sample.

The device, which measures about seven feet long and four feet high, accelerates deuterons, the proton-neutron nucleus of deuterium (heavy hydrogen) against a target containing tritium, a second isotope of hydrogen whose nucleus contains a proton and two neutrons.

The collision produces high energy neutrons which are directed at the material being analyzed, causing fissions to occur. The number of fissions although few in comparison to the number of fissile atoms present, is an accurate indication of the amount of fissile material.

Because the elements of interest to WNRE researchers fission under neutrons of different energies, the accelerator can be used to select the neutron energy most appropriate to the material being studied.

Besides analyzing new and used fuel, the accelerator can be used to determine amounts of uranium, thorium or plutonium in chemical streams such as would be produced in fuel reprocessing systems.