

A NATIONAL FUSION PROGRAM FOR CANADA

Canada is the only important industrialized nation which does not have a serious fusion program. Although significant laser physics research related to inertial confinement has been conducted at the National Research Council (NRC) and the Natural Sciences and Engineering Research Council (NSERC) is funding a number of competent university groups as part of its strategic grants program, the Canadian effort, on the whole, is small scale, uncoordinated and lacks the necessary major facilities and focus in relationship with international activities. The federal annual budget for the National Fusion Program of \$260,000 is totally inadequate to ever achieve any benefit for Canada and does not even approach the funds being expended by provincial utilities (the most active being Hydro-Quebec).

With the rapid advances being made in the world towards the goal of fusion energy it is important that Canada develop a technological base from which well informed decisions regarding the role of fusion for Canadian needs can be made. Furthermore, it is essential that Canadian industry be put in a position to supply at least some of this country's requirements for fusion hardware in the future and if possible to compete for the supply of some specialized sub-systems and auxiliary equipment on a worldwide basis. This is a long term process which cannot be completed overnight.

There is considerable urgency to the present situation; international developments in fusion are accelerating, while Canada with no serious national fusion program has a long way to go up the "learning curve". Recent attempts by Canada to gain access to the International Fusion Research Council (IFRC) (of which Australia is a member) were met with the reply that only countries with "significant" fusion programs would be accepted for membership. Furthermore, in recent months commercial security measures have been introduced at some of the large fusion centres in the USA, making access to information considerably more difficult. Even more important is the fact that a number of key Canadians have been attracted to programs in other countries and therefore permanently lost to this country. Immediate opportunities for international collaboration exist, but once energy "break-even" has been demonstrated, a nation which does not have a credible fusion program would likely be excluded.

The immediate goal for Canada must be to establish a national program of technological and scientific capability and industrial preparedness which would permit Canada to gain access to and be in a position to use the vastly increasing international pool of knowledge and technology on fusion energy.

The achievement of the above goal will require:

- a) the federal government to take the lead in funding and initiating the program,
- b) a coordinated effort by both the federal and provincial governments involving the federal and provincial laboratories, the universities and particularly the utilities and Canadian industry,