

TABLE 1 - RECOMMENDED MINIMAL BUDGET FOR CANADIAN NATIONAL FUSION PROGRAM

(All units in 1979 millions of Canadian Dollars)

FISCAL YEAR	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88
Federal Funds for National Fusion Program	0.3	3.0	6.0	9.0	12.0	15.0	12.0	12.0	12.0
NRC In-house Laser Fusion Group	<u>0.9</u>	<u>1.2</u>	<u>1.5</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Total Federal Funds	1.2	4.2	7.5	11.0	14.0	17.0	14.0	14.0	14.0
Other Sources of Funds for National Fusion Program*	0.7	1.8	6.5	12.0	14.0	8.0	3.0	3.0	3.0
TOTAL	1.9	6.0	14.0	23.0	28.0	25.0	17.0	17.0	17.0

*Includes: Provincial Governments/Utilities/Foreign, etc.

Deuterium is a stable material found in about one part in 6,000 in ordinary hydrogen. Its oxide, D₂O, called heavy water, is being produced in large quantities in Canada. Tritium is not found in nature. A fusion plant would manufacture its own supply of tritium by allowing the fusion neutrons to be captured in lithium. An atom of lithium is needed for each atom of tritium so that effectively the D-T fusion reaction needs a supply of lithium. This appears to be sufficiently plentiful to provide for possible world fuel requirements for several hundred years.

In the first fusion power plants the only fuels would be deuterium and lithium. Such plants would produce no fission products, the only radioactive material involved is tritium. While the structural materials in the plant would become radioactive, no particular problem is presented during normal operation. These power plants operate by absorbing the energy released by the reacting plasma in a "blanket" wrapped around the reaction region. The hot blanket is used to heat a working fluid which could drive a gas turbine which, in turn, drives an electrical generator.