

seem to be positive advantages in embarking on a policy of atomic energy co-operation with that body:

(a) Euratom countries will naturally tend to purchase nuclear materials from countries about whose atomic energy developments they are best informed. A co-operative programme with Euratom would lead to close contacts between our respective atomic energy industries and this might be expected to provide our uranium producers with an entrée to the Euratom market. This is particularly important in view of the fact that during the initial stages of Euratom's power development programme, the market for uranium will be quite limited. The opportunities for the sale of Canadian uranium will be further restricted because two Euratom countries (Belgium and France) are substantial producers of uranium and because the United States and the United Kingdom agreements with Euratom will probably give American and British firms a commercial advantage in the Euratom market.

(b) Co-operation with Euratom might also provide Canada with an opportunity to develop reactor technology at a faster pace than is now envisaged by providing us with access to European technological resources. It might also serve to interest European countries in the specifically Canadian type of reactor (CANDU) and thus create a market in Europe for fuel elements of a kind for which we would be the natural source of supply and also for reactor components.

(c) Euratom represents a significant step towards European integration and it is in Canada's interest to lend support to this political concept particularly in view of the reserved attitude which we have been forced to take towards the "European Economic Community."

4. Annex A to this memorandum describes the agreements now proposed between Euratom and the United States and the United Kingdom respectively. Briefly, the United States is offering generous financial and technological assistance for both a joint reactor construction programme and a joint research and development programme. The United Kingdom, on the other hand, is negotiating an agreement limited to providing the framework for institutional and commercial co-operation.

5. Of the many ways in which Canada might co-operate with Euratom, the most promising would seem to be a joint research and development programme on a natural uranium/heavy water reactor. Not only have we concentrated our efforts on this reactor system, but the report "A Target for Euratom" noted that it promised to be particularly well adapted to European requirements. The main alternative, a reactor construction programme of the kind on which the United States and Euratom have embarked, would appear to be excessively costly for our purposes and also risky since we cannot be certain of the feasibility of our approach to reactor technology until the NPD plant has been completed.

6. The details of a joint research and development programme would have to be worked out with Euratom. Initially it would probably be confined to exchanges of information but might subsequently involve a sharing of development work now being undertaken by the Nuclear Power Plant Division of AECL for the CANDU Reactor, with particular reference to the lattice, the pressure tubes, and the calandria and moderator system; or we could agree to an exchange of information on our experiences in the use of heavy water with its problems of purity, concentration, losses through fittings and equipment, tritium content, etc. The cost to Canada of such a programme for the first year or two would be small since our share in it could be fulfilled by a reorientation of part of AECL's existing programme of work. The cost of the work being done, to which Euratom might be given access, would probably be of the order of one million dollars per annum (out of a planned annual expenditure by the NPP Division of ten million dollars per annum). The only additional expense