NUCLEAR ENERGY LEGISLATION IN CANADA

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SUMMARY

The development, use and application of nuclear energy in Canada are governed by regulations made under the Atomic Energy Control Act and administered by the Atomic Energy Control Board, established by the Act. The Board has set up the Reactor Safety Advisory Committee to consider in detail and advise the Board on applications for permission to construct and operate nuclear reactors outside Federal government establishments. There is as yet no nuclear liability legislation of general application in Canada, but indemnification against liability for nuclear damage is provided by contract in some circumstances.
Nuclear energy in Canada is controlled in all its aspects under the Atomic Energy Control Act (the "Act"), passed in 1946, continued in the general statute revision in 1952 and amended in 1954.

The purpose and scope of the Act are indicated by its preamble, which begins: "Whereas it is essential in the national interest to make provision for the control and supervision of the development, application and use of atomic energy and to enable Canada to participate effectively in measures of international control of atomic energy which may hereafter be agreed upon.....""

The Act establishes a five-member Atomic Energy Control Board (the "Board") consisting of the President of the National Research Council, ex officio, and four other members appointed by the Governor in Council. The Board is a corporation, and acts only as an agent of the Crown.

Section 9 of the Act empowers the Board, with the approval of the Governor in Council, to make regulations, inter alia, "for developing, controlling, supervising and licensing the production, application and use of atomic energy;" "respecting mining and prospecting for prescribed substances;" "regulating the production, import, export, transportation, refining, possession, ownership, use or sale of prescribed substances and any other things that in the opinion of the Board may be used for the production, use or application of atomic energy;" and "for the purpose of keeping secret information respecting.........atomic energy....""

Section 8(e) of the Act also empowers the Board to establish "scholarships and grants in aid for research and investigations with respect to atomic energy, or for the education or training of persons to qualify them to engage in such research and investigations."

Section 10 of the Act originally empowered the Board to carry on atomic energy research and development and, with the approval of the Governor in Council, to set up corporate agencies to perform any part of these functions.
Regulations under the Act, first made in 1947, have been amended and replaced from time to time. The Atomic Energy Control Regulations (the "Regulations") approved 17 March, 1960 and amended 13 November, 1964, are currently in force. It will be convenient to use certain terms as defined in the Regulations. These terms, and the definitions thereof as they appear in section 101(1) of the Regulations, are as follows:

"atomic energy" means "all energy of whatever type derived from or created by the transmutation of atoms;"

"deal in" includes "produce, import, export, possess, buy, sell, lease, hire, loan, exchange, acquire, store, supply, operate, ship, manufacture, consume, use and dispose of;"

"order" means "any general or specific order, licence, permit, authorization, direction or instruction made, given or issued by or under the authority of the Board;"

"prescribed equipment" means "any property, real or personal, other than prescribed substances, that in the opinion of the Board may be used for the production, use or application of atomic energy;"

"prescribed substances" means "uranium, thorium, plutonium, radioactive isotopes of other elements, deuterium and any substances containing any of the said elements or isotopes;" and

"produce" includes "develop, drill for, mine, dredge, dig, sluice, mill, extract, concentrate, smelt, refine, purify, separate, enrich and process."

The Board is given complete control over dealings in prescribed substances, except for the very small quantities and low concentrations or activities as to which dealings are authorized by the Regulations themselves. As to prescribed equipment, the Board may assume control over dealings to such extent and as to such prescribed equipment as may from time to time be specified by order.
During the first years of its existence, the Board was largely concerned with security of information, the establishment of control over dealings in prescribed substances, the initiation of a programme of grants to Canadian universities for atomic energy research, and the administration of the Chalk River Project.

Security of information involved close consultation with the United Kingdom Atomic Energy Authority and the United States Atomic Energy Commission in the production of the successive Declassification Guides, which laid down the rules for authorizing publication of information on atomic energy developed in the three countries, as well as liaison with the various Canadian authorities concerned with security of information. Security as to patent applications was provided by a section of the Patent Act requiring patent applications in the atomic energy field to be referred to the Board, and by Part V of the Regulations, under which such patent applications may be held in secrecy on the advice of the Board.

Control over dealings in prescribed substances was established through a comprehensive licensing system. Export and import of prescribed substances is controlled through permit systems operated by the Departments of Trade and Commerce and National Revenue (Customs).

The increasing use of radioactive isotopes in research, medicine and industry involves health and safety problems affecting the users and the general public. In this field, the Board normally acts on the advice of the Department of National Health and Welfare and through it of the various provincial Departments of Health. Officers of these departments, of some other provincial departments and of the Board's staff act as health and safety inspection officers under the Regulations.

The university grants programme is administered with the advice of a Grants Committee, on which the Board, National Research Council and other Canadian Government bodies concerned with research grants are represented. The Board's grants have provided part of the cost of the construction and installation of major items of atomic energy research equipment and subsequent grants provide for part of the operating costs.
The Chalk River Project was constructed and initially operated by a wartime subsidiary of Canadian Industries Limited, under the scientific direction of the National Research Council. Shortly after the establishment of the Board, arrangements were made for the Project to be operated for the Board by the National Research Council. In 1952, the Board procured the incorporation of Atomic Energy of Canada Limited ("AECL") and that company took over ownership of the Project and operated it for the Board. In 1954, the Act was amended so as to vest the administration of atomic energy research and development activities in the Minister of the Crown designated under the Act. AECL thereafter reported directly to the Minister, and the Board was left with the control and regulatory functions as its main responsibility.

The Nuclear Reactors Order, made 12 April, 1957, specified nuclear reactors as prescribed equipment for the purposes of section 201 (export and import control) and section 206 (control of other dealings) of the Regulations, but does not affect any reactor built wholly by or for and operated wholly by or on behalf of a department or agency of the Government of Canada. The only reactors affected by the exception are those within the Chalk River and Whiteshell establishments of AECL, as to which the Board has been content to leave responsibility for health and safety to that Crown company.

It has not yet been necessary for the Board to specify as prescribed equipment any facilities other than nuclear reactors, since there are no uranium enrichment plants in Canada, and no facilities outside of AECL establishments for processing irradiated nuclear fuel. Some private concerns are, however, dealing with enriched nuclear fuel, in quantities that could produce accidental criticality if improperly handled. The Board has set up special procedures for dealing with this situation, involving inspection of premises and consideration of all details of the amount and character of the material concerned, storage, handling at each stage of fabrication, preparation for shipment and the adequacy of the containers in which the product is to be shipped. The conditions to be observed in relation to enriched material are embodied in special "criticality licences" when the details have been worked out.
To advise it on the safety of proposed reactor projects in Canada, the Board has established the Reactor Safety Advisory Committee. The permanent members of this committee include scientists and engineers from the staffs of the Board, AECL, the Defence Research Board, National Research Council, the Department of Mines and Technical Surveys and the Department of National Health and Welfare, chosen for their competence and not as representatives of their organizations. In addition, technical representatives of provincial and municipal organizations such as provincial Departments of Health and Labour and municipal health departments are invited to join the committee for discussion of projects of particular interest to their organizations. The committee is assisted in its operation by reactor safety officers on the Board's staff.

Any person contemplating the construction and operation of a nuclear reactor in Canada is encouraged to hold preliminary discussion with the committee on the proposed design and the choice of site. If the Board, on the advice of the committee, is satisfied that a reactor of the general type proposed could be so designed and built as to merit approval for operation at the site, the next stage is an application for a reactor construction permit. For this the applicant is required to submit, for examination by the committee, a report giving details of the proposed site and the location on it of the reactor, full information on the design of the proposed reactor, including its containment features, environmental information, including such things as population density, meteorological and seismological conditions, water supply and surface and subsurface water movements, with a discussion of credible equipment failures with the reactor and the possible consequences thereof. When the review is completed the committee submits its recommendations to the Board regarding the granting of a construction permit and the need for the imposition of any restrictions or conditions therein. During construction the project is subject to committee and Board staff inspection at all stages, and close liaison is maintained between the applicant and the committee on the completion of details of design.

Before a reactor operating licence is issued, the applicant is required to demonstrate that the reactor has been constructed in accordance with the approved designs, and to describe in detail the proposed operating procedures. The committee reviews the proposals and submits
recommendations to the Board regarding the granting of a licence. In addition, a sub-committee checks the qualifications of the individuals proposed as reactor operators before recommending that they be authorized to act as such.

The committee may ask for further information or require design changes at any time and construction or operation of a reactor may be authorized by stages.

After an operating licence is granted, the operator is required to keep the committee informed as to the operation of the reactor and any incidents which might affect health or safety. In addition, nuclear reactor safety experts on the Board's staff carry out periodic inspections to ensure that the provisions of the operating licence are being met and that the operation of the reactor is not causing a health or safety hazard.

Canada has not so far enacted any general legislation dealing with liability for nuclear damage. One reason for this is that, with one exception, which has been dealt with under special legislation, all nuclear reactors in Canada which have reached or are about to reach the stage of operation are owned by AECL, so that the resources of the Canadian Government could be engaged in the event of damage stemming from any of those reactors. While in these circumstances it is unlikely that action would be taken against a contractor or supplier whose equipment might be regarded as responsible for nuclear damage, the possibility of such action cannot be ruled out. To cover that possibility by insurance would result in costly pyramiding of insurance since each contractor and supplier would want maximum protection. The situation has been met in an interim way by the inclusion in the agreements between AECL and its main contractors of provision for indemnification by AECL of the contractor and its suppliers of whatever tier against liability for nuclear damage not resulting from the wilful default or gross negligence of an officer or employee of the contractor or supplier of the rank of superintendent or higher. The main contractor is declared to be a trustee for each supplier in relation to the indemnification agreement. The exception as to wilful default or gross negligence is, of course, somewhat less satisfactory from the point of view of contractors and suppliers, but it was considered that in the absence of enabling legislation the elimination of the exception might throw some doubt on the validity of the provision.
as a whole. The one operating reactor in Canada not owned by AECL, a research reactor at McMaster University in Hamilton, Ontario, is fuelled by enriched uranium obtained from the United States through AECL and leased to the University. Under an agreement authorized by legislation, the University is required to maintain insurance against liability for nuclear damage in the amount of $500,000, and AECL is to indemnify the University and its suppliers against liability for such damage in excess of that amount.

Canada was represented on the conferences which resulted in the Convention on Liability of Operators of Nuclear Ships (the "Brussels Convention") and the Vienna Convention on Civil Liability for Nuclear Damage (the "Vienna Convention"), but has not adhered to either of these Conventions.

In the case of the Brussels Convention, two of the major difficulties were the situation that might be created by the operation of nuclear ships under so-called "flags of convenience", which could result in certain licensing states being exposed to risks far beyond their financial capacity, and the problem of jurisdiction. No provision for dealing with the first difficulty is contained in the Convention, and the provisions for determining jurisdiction, particularly those relating to apportionment and distribution of a limitation fund by the courts of the licensing state, could lead to complications in the case of a major disaster.

In the Vienna Convention several provisions are not in accordance with proposals supported by the Canadian delegation. The liability of an operator may, under the Convention, be fixed at a figure as low as US $5 million, as contrasted with the Brussels Convention figure of approximately US $100 million, and the figure of US $70 million which the Canadian delegation indicated might be an acceptable compromise. There was sharp division of opinion at the Conference as to whether, in the absence of express provision in the Convention, funds provided by an installation state in excess of the Convention minimum would automatically become subject to all the provisions of the Convention. Amendments designed to make it clear that the installation state providing such excess funds could provide for their application otherwise than on
Convention terms were supported by the Canadian delegation, but none was adopted. The draft Convention which went before the Conference gave a contracting state an option to increase the limit of liability in respect of nuclear materials in transit through its territory to an amount not exceeding the limit laid down by its national law. This option does not appear in the Convention as adopted.

No discussion of Canadian legislation can ignore the fact that Canada has a federal constitution, based on the British North America Act, 1867 (the "B.N.A. Act") and its various amendments (none of which amendments is material for the purposes of this article). Under the B.N.A. Act legislative authority is divided between the Parliament of Canada and the Legislatures of the Provinces. Certain subjects, including "Property and Civil Rights in the Province" are assigned to the provincial legislatures. The Parliament of Canada is given power "to make Laws for the Peace, Order, and good Government of Canada, in relation to all Matters not coming within the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces," with specific references to certain subjects as coming within the jurisdiction of Parliament, including "Such Works as........are declared by the Parliament of Canada to be for the general Advantage of Canada........" It is, of course, obvious that the Act and Regulations affect property and civil rights in the provinces, as do a great many statutes of Canada. The constitutionality of the Act and Regulations were challenged in the courts of Ontario in what is usually known as the Pronto case, where the question at issue was whether the Ontario Labour Relations Board or the Canada Labour Relations Board had jurisdiction to certify a bargaining agent for employees of companies engaged in the mining and concentrating of uranium ores. The trial judge held that the Ontario Labour Relations Act did not apply to the employees of the companies concerned. The judge's conclusions are summed up in these words: "In this day it cannot be said that the control of atomic energy was merely of local or provincial concern, and in my opinion it is a matter that from its inherent nature is of concern to the nation as a whole and that the Act and the Regulations are within the powers of Parliament to make laws for the peace, order and good government of Canada." The trial judgment was not appealed. There have been three criminal prosecutions for violation of the Regulations, each resulting in a conviction, but no constitutional question was raised in any of these cases.
There is another Ontario case\(^\text{11}\) in which it was held that the Ontario Mechanics' Lien Act applied in relation to property of a uranium mining company but this case seems not to be regarded as affecting the general authority of the Frooto case.

While the Act authorizes the Board to make regulations governing transportation of prescribed substances, this power has not been exercised. The Board of Transport Commissioners for Canada has issued detailed regulations\(^\text{12}\) as to transportation by rail of radioactive materials. Other federal authorities have made recommendations as to transportation of such materials by sea and air. As yet no transportation authority, federal or provincial, has assumed responsibility for regulating the transport of dangerous goods by road. To meet the situation so far as transportation of radioactive materials was concerned, the Board in 1963 issued its Shipping Containers Order\(^\text{13}\), which requires shippers of such materials to meet the packaging, shielding and labelling requirements of the regulatory authority concerned, or, in the absence of such requirements, to meet the standards set out in the regulations of the Board of Transportation Commissioners for Canada. The Board may prescribe special conditions in particular cases. The Board provides technical advice to Canadian transportation authorities and shippers regarding the suitability of proposed shipping containers and the adequacy of proposed measures to prevent criticality incidents during the transportation of enriched uranium.
REFERENCES

1. S.C. (Statutes of Canada) 1946, c. 37
2. R.S.C. (Revised Statutes of Canada) 1952, c. 11
3. S.C. 1953-54, c. 47
4. SOR/60-119 (Statutory Orders and Regulations) 17 March, 1960
5. SOR/64-458, 13 November, 1964
6. S.C. 1947, c. 23, s. 4, now R.S.C. 1952, c. 203, s. 22
7. SOR/57-145, 12 April, 1957
9. 30-31 Victoria (Imp.) c. 3, 1867
12. Regulations for the Transportation of Dangerous Commodities by Rail prescribed and approved under General Order 893 of the Board of Transport Commissioners for Canada, dated November 2nd, 1962
13. SOR/63-65, 7 February, 1963