Reflections on IAEA/Industry Interactions Based on Canadian Experience Under the NPT

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Greetings from the frozen North ladies and gentlemen. I would like to express my pleasure at being here as a participant in this workshop considering a critical phase, perhaps even a turning point, in the development of IAEA safeguards under the Nuclear Non-Proliferation Treaty of 1970. I would like to thank the management of the INMM and in particular Russ Weber for the opportunity to meet with you today to discuss the impact which Agency safeguards has had on Canadian industry and will soon have on a somewhat different scale on United States industry.

I might say that there are two aspects of the non-proliferation issue which impinge on the industry. The major aspect is, of course, National policy with regard to exports of nuclear materials, equipment and technology. The second, and in comparison, minor aspect, is the implementation of safeguards inspections by the IAEA. IAEA inspection is certainly the lesser of the two evils from the industrial point of view because its economic implications are smaller. It does, however, involve direct contact between IAEA inspection teams and facility operating personnel and the conflicting objectives of these two groups can sometimes be difficult to reconcile.

The recent meeting of the Atomic Industrial Forum in New York, which you may already be familiar with, has also considered the impact of IAEA inspections on U.S. industry. In his presentation to that meeting Jon Jennekens of the Canadian Atomic Energy Control Board said in conclusion,

"In the final analysis the further development and application of the safeguards system of the IAEA is a sine qua non of achieving the ultimate objective of preventing the proliferation of nuclear weapons. The timely detection of diversion of significant quantities of nuclear materials to the manufacture of nuclear weapons or of other explosive devices and the conclusive demonstration to the world community that the safeguards provisions of the NPT are being effectively implemented are attainable goals and their importance cannot be over-emphasized. Careful scrutiny of the technical and operational problems encountered during the application of NPT safeguards in Canada since 1972 will reveal that they were not insurmountable and required only the dedicated attention of the parties concerned."

In the same meeting K.H. Beckurts from Germany said that,

"The world needs new energy sources, but it also needs security against the risks of nuclear proliferation. To find the right way will require strong leadership and cooperation especially between the industrialized nations. But nuclear power will only survive if a viable nuclear industry continues to exist in these countries. We must be aware of this fact, and we must seek the cooperation with this industry to solve the great problems of the future."
Canada has supported both the NPT objectives and the Agency as its operative agent from the beginning and has consistently vested all safeguards implementation rights under bilateral agreements in the Agency. Canada is, therefore, totally committed to the further development of an effective and efficient Agency inspectorate.

The Agreement between the Agency and the United States is based on the Agency guideline INFCIRC 153 commonly known as the "Blue Book", with which you must all be familiar. This document was drafted in 1970 by a committee set up by the Agency and was the result of deliberations by 48 member States over a period of two years. It was intended to protect the State and the Industry while at the same time guaranteeing the right of the Agency to conduct adequate inspections. This it does admirably well. Article 2 of the IAEA Statute of 1956 reads,

"The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose."

Clearly the facility, the State and the Agency all wish to establish the legitimacy of the operation for the assurance of the rest of the world. Article 4 of the Blue Book reads,

"The Agreement should provide that safeguards shall be completed in a manner designed:

(a) To avoid hampering the economic and technological development of the State or international cooperation in the field of peaceful nuclear activities, including international exchange of nuclear material;

(b) To avoid undue interference in the State's peaceful nuclear activities, and in particular in the operation of facilities; and

(c) To be consistent with prudent management practices required for the economic and safe conduct of nuclear activities."

Clearly no conflict of interest here. Finally Article 7 of the Blue Book reads,

"The Agreement should provide that the State shall establish and maintain a system of accounting for and control of all nuclear material subject to safeguards under the Agreement, and that such safeguards shall be applied in such a manner as to enable the Agency to verify, in ascertaining that there has
been no diversion of nuclear material from peaceful uses to nuclear weapons or other nuclear explosive devices, findings of the State's system. The Agency's verification shall include, inter alia, independent measurements and observations conducted by the Agency in accordance with the procedures specified in Part II below. The Agency, in its verification, shall take due account of the technical effectiveness of the State's system."

I would not have considered it worthwhile to take up your time today with motherhood statements about non-proliferation, Agency benevolence and living happily ever after. In fact you may find this marriage a bit prickly at times and I would like to suggest some ways of reducing the friction to everyone's benefit.

In view of what I have already said why should problems arise? In fact they arise from the paragraphs I have already quoted from the Blue Book.

To begin with, the Agency has not only a right but an obligation under its agreement with the U.S. to apply safeguards. There is little use bargaining with such an organization because it has nothing to gain in making concessions and nothing to lose in insisting on meeting its obligations. This is as it should be if the Agency is to fulfill its role.

While the Agency's selection procedures do ensure a high caliber of inspector the requirement to enlist staff from member States with due regard to equitable geographical representation eliminates the possibility of selecting only inspectors with relevant experience such as operations, material accounting and control or nuclear regulatory service. Only a few member States have highly developed nuclear industries and nuclear regulatory agencies. Inspectors generally have high academic qualifications but direct industrial or regulatory experience is not a common factor among them. This is not to criticize but only to point out an unavoidable fact of life. This is also not to say that an academic will make a less effective inspector than an engineer or a shift foreman. What it does say is that Agency personnel are not necessarily well qualified under Article 4 of the Agreement, to judge what constitutes "undue interference" in the operation of your specific facility. The Agency's ability to judge what is consistent with "prudent management practices" is similarly dependent upon outside advice.

To a lesser degree I would say the same is true of your own DOE and NRC. When it is a question of operation of the facility and management of the facility which includes accounting practices, the ability to judge consequences of actions affecting the facility operation rests largely with the personnel of the facility.
Whether IAEA safeguards work smoothly in your plant or creates difficulties is, I believe, largely in your hands. Considering that you already operate under an extensive and sophisticated regulatory program it may not be obvious why this should be the case. I would like to approach this point now from a different direction.

Article 7 of your agreement deals, as I have noted earlier, with the State System of Accounting and Control and stipulates that the Agency should verify the findings of the State System. There is, however, a Catch 22; the Agency's verification shall include "independent measurements".

Ten years from now it is possible that all of this will be cut and dried. At present, however, in spite of extensive efforts on the part of Industry, States and the Agency, no complete set of routine procedures yet exist for carrying out the type of verification the Agency is supposed to provide. Industry does not easily appreciate the role in which the Agency is cast. It is after all an instrument created by the members of a club to which we all belong and acting according to the dictates of the members through the Board of Governors. It has been directed to act as though member States are in collusion with industry to divert nuclear material to explosive use and hide the fact from the Agency. Under analysis it will be seen that perfectly adequate nuclear material control from the operator's point of view is of little value to the Agency unless the Agency duplicates what the facility does. The same is true of the State control system. A smoothly operating system might provide an effective cover for a clandestine weapons program through a sophisticated material embezzlement scheme. The Agency is supposed to be able to detect such an activity.

In addition to independent auditing then, the Agency must analyse each facility to determine a system of checks, inventory measurements and containment and surveillance devices that will detect any attempt at diversion.

Recognizing that for most cases the Agency possesses only rudimentary knowledge of your operation, the proposals that will be put forward will undoubtedly conflict with your operation to some degree. Anecdotes are too lengthy to include here but I can assure you that there are a few in the Canadian experience. What can you do to minimize the impact of these conflicts?

Your first defence is, I suggest, offense. This is not to recommend resistance to Agency safeguards because we are after all trying to promote them on a global scale. You can, however, devote some manpower to an analysis of your own plant. The place to start is with the Blue Book to try to see the problem from the Agency's point of view. A quality control program for instance is of use to
the Agency only if the Agency has some way of verifying its conclusions that is independent of operator generated data. I suggest that you are in a better position to analyse such a situation and propose an efficient system than is the Agency. At least you could be in a position to comment constructively on Agency proposals.

The next on your list should be your particular facility attachment. This is a part of the total Agreement but is subject to amendment at any time. The facility attachment should set out in detail the inspection regime to be applied to your plant. Again, if we were at a stage when such things were standardized there would be little room for manoeuvring. We are not at that stage and consequently you can have an influence on your own fate. The entry into force of a facility attachment has to come, unfortunately, prior to a complete safeguards approach being in place. This is so because at this time techniques for many types of plants are not yet fully developed. It is prudent, therefore, to be sure that the facility attachment does not commit you to procedures or goals which are impossible or highly impractical to achieve.

The basic goal is, of course, obvious. Even a means of achieving it may be theoretically obvious. However, safeguards approaches invariably require measurements. Destructive and non-destructive assay methods certainly exist but can they be applied in a manner which will actually provide the Agency with a positive conclusion without either seriously affecting plant procedure or being prohibitively expensive. Again I suggest that you, particularly as members of a highly sophisticated and integrated nuclear fuel cycle, and operating in a country which is responsible for much of the advanced technology in the world, are in an excellent position to play a positive role in designing safeguards systems in collaboration with the Agency which can be applied to similar plants throughout the world in an effective, efficient and hopefully painless manner.

Don't be upset if the Agency treats your advances with suspicion. They are paid to be suspicious and its nothing personal. On the other hand you can decide to either accept blindly or actively resist attempts by the Agency to apply safeguards. Either one is a losing proposition. Time and the Government are on the Agency's side and you won't beat that combination. Better to jump in with both feet and create a situation that everyone, including the somewhat uncertain public, will be happy to live with.

Thank you again for this opportunity to share our thoughts and experiences. American business has always been credited with the ability to make a buck out of anything. Maybe you can even turn a profit out of safeguards. That would really be a breakthrough for non-proliferation.