EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT THE NPT*

*BUT WE'RE AFRAID TO ASK

by

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A description of the Treaty on the Non-Proliferation of Nuclear Weapons and the Methods of control to be expected from the IAEA. The effects on the Canadian Nuclear Program will be assessed briefly.

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1. HISTORY

I suppose the concept of disarmament on arms control has been with us since shortly after the first primitive man was struck by a rock hurled by one of his more aggressive and imaginative contemporaries. Unfortunately, until very recently, arms control remained more or less a theoretical concept despite some half hearted attempts after World War I. The failure of those attempts hardly needs elaboration. The primary obstacle to such measures appears to have been the universal unwillingness of nations to accept any form of international or bilateral inspection, without which, any proposed control measures would have been meaningless. We have tried the honour system and it doesn't work.

Finally, however, World War II produced nuclear explosives, the ultimate weapon. I do not use the term ultimate in the technologically limiting sense because I would not want to precipitate a rush back to the drawing boards by nuclear weapons scientists, but in the sociological sense, because finally mankind seems to have produced a method of destruction the sheer magnitude of which seems to have terrified him enough to reverse the trend in the disarmament business.

First steps toward nuclear arms control were made by the USA in 1946 when, under the Baruch Plan, they offered to place "managerial control or ownership" of all nuclear activities "potentially dangerous to world security" in the hands of an "International Atomic Development Authority". (The above sentence in my text is full of quotation marks). The USA would have agreed to stop manufacture of atomic bombs and to dispose of its stockpile once the control measures had been established.
It is easy from our vantage point as neutral Canadians to see that this was an obvious and unsuccessful attempt to prevent the Soviet Union from developing nuclear weapons. We should not, however, overlook the significance of an offer to relinquish even partial control over such a strategically important military device. The times were definitely changing.

By the mid-fifties the USSR and the USA had produced so much raw material for nuclear weapons that complete nuclear disarmament had become a political concept only. No amount of inspection or verification could ever detect raw material or secretly stored nuclear weapons. Several other problems became apparent to the two major nuclear powers. The number of nations possessing nuclear weapons had risen from one to five. The "two body problem" of two nuclear weapons states co-existing in dynamic equilibrium quickly degenerated to a "five body" problem which both physicists and the politicians felt was very difficult to analyse. The prospect of the addition of several more members to the club prompted the USSR and the USA into one of their infrequent but fruitful moments of agreement. In 1963 the Partial Test Ban Treaty was signed limiting all further nuclear weapons testing by parties to situations where the products of the testing could be contained within the borders of the testing state. Unfortunately France and China did not sign.

The mutual desire of the USSR and the USA to prevent further proliferation of nuclear weapons is shown by their negotiation of the Non Proliferation Treaty in the late 1960's. Admittedly the negotiations were long and painful, but they were completed and at the same time that an issue as divisive as the war in South East Asia existed between the two co-sponsors of the NPT.
The Treaty was opened for signature on 1 July, 1968 and up to the present time has been signed by about 99 countries and ratified by about 65 countries. Canada signed on 23 July, 1968 and ratified on January 8, 1969. During 1969 and 1970 officers of the Board have been actively engaged in detailed discussions and negotiations with the IAEA and all Canadian nuclear facility operators. These negotiations are now in the final stages and will be completed approximately by the end of this year. We expect that IAEA safeguards will be in effect in Canada early in the spring of 1972.

II. PURPOSE OF THE TREATY

The primary purpose of the Treaty is clearly to prevent the further spread of nuclear weapons. This goal is obviously to the advantage of present nuclear weapons states and has been adopted as desirable by most other states. As a secondary purpose however there is a clear commitment by nuclear-weapons states to consider means by which the vertical or numerical proliferation of nuclear weapons can be halted or reversed.

III. CONTENTS OF THE TREATY

The Treaty itself is frankly discriminating in its treatment between nuclear - weapon - states and non - nuclear - weapon states. (By the way a nuclear-weapon state is defined in the Treaty as one which has manufactured and exploded a nuclear weapon prior to 1 Jan. 1967. This means that future development of a nuclear weapon does not entitle the developing state to the privileges allowed present nuclear-weapon-states).

The nuclear weapon states party to the Treaty undertake not to transfer to any recipient nuclear weapons, control either direct or indirect over nuclear weapons, or assistance in the manufacture of nuclear weapons.
Each non-nuclear weapon State party to the Treaty undertakes not to receive nuclear weapons or control direct or indirect over nuclear weapons and undertakes not to manufacture or acquire nuclear weapons.

I should point out here that the Treaty clearly recognizes that there is no real difference between a nuclear weapon and a nuclear explosive device or peaceful nuclear explosive device etc. The prohibitions described above apply to all nuclear explosive devices no matter what adjective is attached.

The non-nuclear weapon states go far beyond the mere promise to give up nuclear weapons however and agree to accept safeguards or external control measures to ensure that they are complying with the terms of the Treaty. This acceptance of international control measures is the feature which makes the NPT unique in the development of arms control. Many states have finally accepted a measure of international control over their own activities in order to obtain an improvement in mutual security. There is no requirement in the Treaty for nuclear - weapon - states to accept safeguards control measures.

This open discrimination against non-nuclear weapon states was the source of much criticism when the final draft of the treaty was presented.

India's rather colourful criticism said in part:

"Institution of international controls on peaceful reactors and power stations is like an attempt to maintain law and order in a society by placing all its law-abiding citizens in custody while leaving its law-breaking elements free to roam the streets".

In order to counteract this criticism of discrimination and also to allay fears that the nuclear weapon nations would use the safeguards system as an industrial espionage network the USA and the UK both volunteered to make
their peaceful nuclear programs subject to inspection by the IAEA even though no such commitment is required under the NPT. The USSR has made no such offer.

In addition to the commitments by the nuclear-weapon states not to give and the non-nuclear weapon states not to receive, all states party to the Treaty undertake a commitment not to provide (a) "source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material to any non-nuclear weapon state for peaceful purposes unless the source or special fissionable material shall be subject to ------------safeguards---------"

This means that Canada can only export uranium, heavy water, or reactors to other NPT states or to states who have accepted international safeguards on a project basis. For example a state not party to the Treaty could sign a safeguards agreement with the IAEA covering a project such as a reactor and leave the remainder of its nuclear program not covered by safeguards. The nuclear material used or produced in the safeguarded reactor would of course remain under IAEA safeguards, and could not be transferred into the unsafeguarded segment of the nuclear cycle. It also means that exports to any nuclear-weapon state are allowed without any safeguards. This is one place where Canadian Policy is significantly different from NPT conditions. Canadian policy still bars exports of nuclear material or equipment without safeguards.

In addition to these major obligations the Treaty also contains several secondary commitments including Article VI the obligation to pursue in good faith, negotiations on nuclear and general disarmament.
Article IV guarantees the right of participants to pursue research and development and the right of access to equipment, materials and technology.

Article V states that the potential benefits of peaceful nuclear explosions should be made available to States party to the Treaty on a non-discriminatory production-cost-only basis.

IV THE EFFECT OF NPT SAFEGUARDS ON THE CANADIAN NUCLEAR PROGRAM

(a) Domestic Operations

The IAEA Safeguards system is based on a comprehensive record of the location of all nuclear material within a country. This record is kept up to date by periodic reports and confirmed by periodic physical inspections. In order to provide the Agency Inspectors with initial information on a facility, a design review is provided. This design review contains details of the physical plant internal records system and any other information required to allow the inspector to understand the operation of the facility.

Records

The IAEA safeguards system does not in general demand the generation or handling of data beyond that required for efficient materials management or facility operation. It has been our experience during the initial negotiation that most Canadian nuclear material users already generate adequate information. There may be some minor additions to record systems resulting from present negotiation but they are not expected to be significant.

Reports

Nuclear material users in Canada will continue to report to the Board as at present and the Board will provide the Canadian composite report to the IAEA.
These reports will be made on a monthly basis. The revision of the Board's Reporting System, which was made last year was partially to make the Canadian system compatible with the anticipated IAEA requirements.

**Inspections**

The greatest impact on most domestic users will be the introduction of IAEA inspectors into their facilities. In general these inspectors will examine the records of a facility and also conduct physical examinations of the safeguarded material. Where appropriate, samples may be taken, or non-destructive measurements made, either with facility instruments calibrated by an inspector or with instruments brought by the inspector.

The inspector may request certain operations to verify the presence of nuclear material. For example the booster rod at NPD could be moved and the reactivity effect observed. Inspectors may not carry out any particular operation but must request it of the operator.

Most of the foreseeable phases of the inspection will have been discussed during pre-inspection visits to the nuclear facilities concerned. We have one of these visits scheduled for CRNL for the 29th of this month by the way. In cases of conflict between the Inspector and the Operator the first level of adjudication will be provided by the AECB as the national regulatory body. It is hoped that all disagreements can be resolved by Board officers although provisions for escalation of such differences up to the political level does exist as does political methods of resolution of such differences.

I should not dwell overlong on the possibility of differences because our expectation and our experience to date has been that all safeguards operations will be carried out on a basis of friendly cooperation.
Cost of Safeguards

The costs of safeguards as in the costs of other measures of national importance will be born by the Federal Government. Individual facility operators are not expected to incur any out-of-pocket expenses due to NPT safeguards. Facility operators are expected to bear the man-hours required to accompany the inspector on his rounds and to explain books and records. Some additional manpower might be required to prepare for IAEA inspections especially in facilities handling bulk material where it might be advantageous to run an in-process inventory to zero or to empty or fill a certain piece of process equipment.

Efforts will be made to coordinate IAEA inspections on such facilities with normal shutdowns and inventories.

Protection of Proprietary Information

Safeguards are applied to nuclear material not equipment or facilities. It is obvious, however, that some knowledge of and access to equipment and facilities must be necessary if the inspector is to do his job properly. Where the facility operator is truly concerned about proprietary information various methods exist to solve his problem. In most cases however proprietary information is not available to the naked eye or ear and no risk is involved to the operator. The IAEA inspectors are in general capable, honest men who have sworn to guard any information obtained in the performance of their duties.
EFFECTS ON CANADA'S INTERNATIONAL MARKETS

The effect of the NPT on Canadian international trade in nuclear materials and equipment is very difficult to assess at the present moment. It was the intent of the Drafters of the treaty to simplify trade in nuclear materials and equipment between parties to the treaty. This could well be the ultimate result. Before the NPT it was necessary to conclude a bilateral safeguards agreement with a country before a significant transfer of nuclear materials or equipment could be made. We negotiated bilateral safeguards with our major customers such as PAKISTAN, INDIA, GERMANY, UK, USA and JAPAN. The need for this type of agreement will disappear once the NPT is in effect.

If all potential suppliers and customers are parties to the NPT then the international transfer of nuclear materials and equipment will in fact be greatly expedited. The possibility of suppliers or customers outside the NPT selling or demanding "black market" nuclear materials without safeguards is one which could jeopardize the continued existence of the Treaty. At present most of the potential suppliers have indicated that they will sign the Treaty with the exception of France and China. France has stated publicly that she will not sign the Treaty but will act as if she were bound by the Treaty. China has not so far appeared as a supplier in the nuclear market. The non-nuclear suppliers seem to be accounted for so the only possible strain on the Treaty could arise from the non-signatory customer who says I want a reactor or uranium without safeguards. Would one of the signatories break ranks for the sake of that business? Well we shall have to wait and see.
CONCLUSION

NPT Safeguards are here. The next round of discussions between CRNL and Agency inspectors takes place on 29th and 30th of September. These discussions should be relatively painless and straightforward as should the actual safeguards inspections when they occur. There will obviously be a certain amount of bother and loss of man-hours associated with the application of safeguards but the end results should be well worthwhile even if no further improvements are made in the field of arms controls.

If I was an EXTREME optimist, I might predict that the demonstration that international controls can really work might lead to further steps in arms control or disarmament. That is too much of an extrapolation from present conditions but it is an appealing possibility.