

Reinforcing nuclear safeguards and the role of the IAEA

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Introduction

Thirty-five years after the entry into force of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), there are excellent reasons to consider that it is meeting its objective of halting nuclear proliferation. Indeed, no non-nuclear weapon State (NNWS) party to the NPT has ever tested a nuclear explosive device; South Africa, which had manufactured half a dozen nuclear weapons, joined the NPT in 1991 and dismantled its weapons under International Atomic Energy Agency (IAEA) verification; and in 2003 Libya renounced the pursuit of its undeclared nuclear weapons programme.

Yet, it is obvious that the international community is more concerned than ever that States and/or non-State actors could covertly acquire enough nuclear material to manufacture nuclear explosive devices.

As stated by the Director General of the IAEA² “in recent years, three phenomena have radically altered the security landscape. They are the emergence of a nuclear black market, the determined efforts by more countries to acquire technology to produce fissile material useable in nuclear weapons, and the clear desire of terrorists to acquire weapons of mass destruction”.

Indeed, the two greatest nuclear proliferation risks the world community is most likely to face in the coming decade are:

- a terrorist or sub-national group acquiring a quantity of nuclear material sufficient to manufacture a crude nuclear explosive device, or acquiring a ready made nuclear weapon; and
- a NNWS having developed and mastered the nuclear fuel cycle technology, and/or having accumulated high enriched uranium (HEU) or plutonium (Pu), deciding, for security or other reasons, to withdraw from the NPT and to rapidly manufacture nuclear weapons.

¹ Views expressed in this paper do not necessarily represent those of the International Atomic Energy Agency and the IAEA accepts no responsibility for them.

² The Financial Times. 2 February 2005.

The threat from non-State actors

Concerning the first risk, a terrorist or sub-national group, could attempt to acquire the desired quantity of nuclear material in a number of ways.

- One such procurement route would be to progressively accumulate small quantities of nuclear material smuggled through illicit trafficking. Based on the low cumulative amount of HEU and Pu seized over the last 11 years in trafficking cases reported to the Agency, this would appear to be a slow and difficult way to go. In addition, in most cases the material containing the HEU or Pu would need to undergo chemical or physical transformation before it could be used in a nuclear explosive device. There are probably only a limited number of locations in the world where such activities could take place without the knowledge of the host State.

The Agency continues to closely monitor information regarding illicit trafficking and to identify the origin of the seized materials and their possible destination. It is however the responsibility of individual States to take all the measures necessary to effectively prevent and detect any smuggling attempts (e.g. through appropriate security measures at all installations containing sensitive nuclear material) and to promptly and fully inform the Agency of such events.

- Another possibility would be for a sub-national group to successfully infiltrate or attack a facility storing HEU, Pu or even nuclear devices and to steal these items. It is the responsibility of all States to make sure that all facilities processing and storing these sensitive materials and devices are adequately protected. The Agency provides assistance to States, upon request, in evaluating and assisting the nuclear material protection, control and accountability measures aimed at addressing these threats at facilities.

It should be recognized that the risk of this scenario could be particularly high where domestic conflicts exist and central governments may not be in full control of nuclear installations in the affected areas.

When the security of nuclear material is at risk, the international community can play a crucial role in offering support in securing it, for example in the framework of the Global Threat Reduction Initiative.

The risk of proliferation by States

Let us now turn to the other most important horizontal proliferation risk: the attempt by a NNWS to master the nuclear fuel cycle and nuclear weaponisation technologies with the objective of being in a position, if and when so decided, to rapidly manufacture nuclear weapons.

Article IV of the NPT states that “nothing in this Treaty should be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research,

production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty”.

The purpose of the international safeguards regime is to deter any State party to the NPT from using these inalienable rights, directly or indirectly, to develop or support a nuclear weapons programme. This deterrence is based on the concept that:

- first, the risk of detection by the Agency of the diversion of nuclear material from declared facilities or of the existence of undeclared nuclear material or activities would be sufficiently high, and
- second, that if such cases are reported to the UN Security Council (UNSC) by the Agency’s Board of Governors, the political and economic response from the international community would work towards discouraging any State from pursuing such a programme.

The safeguards system has evolved to better detect at an early stage, any diversion of nuclear material placed under safeguards, as well as undeclared nuclear material and activities³, including those involving small quantities of nuclear material. For example, the Agency has recently found a number of cases where a State failed to declare small quantities of nuclear material and their use in undeclared irradiation and processing activities.

The ability to uncover such failures was made possible through the thorough analysis of all relevant information available on a State, supported by better open source search and analytical tools, satellite imagery, improved techniques for particle analysis from environmental swipe samples and, where an additional protocol is in force (or provisionally implemented), broader access rights to locations and information. The Agency is also actively investigating the recently discovered worldwide covert supply network of sensitive nuclear technologies and equipment in order to uncover the participants in this and other possible networks with the aim to assist Member States in dismantling them.

However, recent experience has also demonstrated that if a State has decided to conceal nuclear material and activities it is extremely difficult for the Agency to uncover them, in particular in countries where there are severe limitations on the free circulation of information.

It is therefore essential to consider the level of deterrence that exists today in the cases where the Agency has only a limited capability to detect indications of undeclared nuclear material and activities and where international proliferation concern is high. The question is therefore for the international community to decide on what appropriate response is required in the cases when a State:

- is found in non-compliance with its safeguards agreement,
- withdraws from the NPT, or
- tests a nuclear explosive device.

³ particularly in NNWS having in force both a comprehensive safeguards agreement and an additional protocol based on The Model Protocol Additional to the Agreement(s) between State(s) and the IAEA for the Application of Safeguards (INFCIRC/540 (Corr.)).

This paper will consider only the first two cases. It is unlikely that a NNWS would test a nuclear explosive device while party to the NPT, and therefore response to such a test is a broader issue to be addressed by the international community.

Response in case of non-compliance

Once a State has been found to be in non-compliance with its comprehensive safeguards agreement it can be anticipated that the international community would suspect that the State may be developing a nuclear weapons programme and would expect the IAEA to provide some assurance that this is not the case.

But to what extent can the IAEA do so?

Before answering that question one should bear in mind that the NPT does not prohibit a country from pursuing nuclear fuel cycle related activities as long as they are declared to the Agency in accordance with the State's safeguards agreement. These activities can include:

- mining or producing natural uranium, even if it is not justified economically;
- constructing an enrichment facility to produce either low enriched uranium (LEU) or HEU long in advance of any demonstrated national need and even if it is not economically justified;
- processing spent nuclear fuel and separating the Pu contained therein, even if there is no technical or economic justification for doing so and no plan to recycle this material; and
- converting uranium of any enrichment level, or Pu, into metal form e.g. for research reactor fuel or for purely scientific purposes.

Also, a State is entitled, without having to report to the Agency:

- to study and test the effect of shock waves on non nuclear materials;
- to develop high explosives for high precision applications such as shaped charges;
- to undertake theoretical studies of the effect of nuclear explosions; or
- to develop or procure neutron sources e.g. for applications such as oil logging that can also be used as initiators in nuclear weapons;

as long as no nuclear material is used in any of these experiments. It should however be recognized that it is extremely difficult for the Agency to verify that no nuclear material is being used in such activities since the Agency's access rights to locations

where such experiments may be taking place (particularly military sites) are very limited, even when measures of the additional protocol are being implemented.

If a State has been concealing nuclear material or activities in non-compliance with its comprehensive safeguards agreement, can the Agency provide sufficient assurances that these activities are not related to a nuclear weapons programme? The answer is that the Agency might be able to do so in some cases but certainly not in all, depending on various factors such as the type of failures to comply with the safeguards agreement, and the level of co-operation and transparency provided by the State concerned.

The recent case of Libya is exemplary in this respect. If Libya had not admitted that it had a nuclear weapons programme, the Agency would not have been in a position to prove that the uranium conversion and enrichment activities undertaken covertly by Libya over more than 20 years were for such a programme. And if the Agency had not been able to investigate Libya's weapons related capabilities, including its missile programme, the Agency's conclusions regarding the abandonment of Libya's nuclear weapons programme would certainly not be as strong as it is today.

However, there could be cases where the Agency might not be in a position to provide the expected assurances that, in a State found in non-compliance, its nuclear activities are exclusively for peaceful purposes, if the Agency's authority is limited to that provided under comprehensive safeguards agreements and additional protocols.

For those cases, the Agency would need broader access rights to information, locations and persons until such time as it is in a position to draw the necessary conclusion.

It is therefore suggested that the UNSC should consider the merit of adopting a **generic** resolution, stating, independently of any specific case, that if a State is found by the IAEA to be in non-compliance with its comprehensive safeguards agreement, upon request by the Agency, the UNSC would automatically adopt a **specific** resolution under Chapter VII of the UN Charter requesting that State to grant to the Agency "access at all times to all places and data and to any person" as foreseen in Article XII.A.6 of the IAEA Statute.⁴ These extended access rights would be used to resolve outstanding issues, and would be terminated as soon as the Agency has been able to draw the conclusion that there are no undeclared nuclear material and activities in the State as a whole. The resolution could also call upon the Director General of the IAEA to report to the Board of Governors and, as appropriate, to the UNSC, if such access was denied by the State.

Such a resolution would allow the IAEA safeguards system to provide the international community with more credible assurances regarding the peaceful use of all nuclear material in the State in a faster, more effective and more efficient manner. This step would also greatly help dispel a widespread misconception that referring a State found in non-compliance to the UNSC would almost automatically mean political and/or economic sanctions.

⁴ A number of variations of this concept can be envisaged, and legal expertise will be needed to find the best formulation to reach the desired objective.

Response in case of withdrawal from the NPT

As foreseen in Article X of the NPT, each State party shall “have the right to withdraw from the Treaty if **it decides** that extraordinary events, **related to the subject matter of this Treaty**, have jeopardized the supreme interest of its country”.

The notice “shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests”.

Considering the case of the Democratic People’s Republic of Korea (DPRK), a fundamental question is whether its withdrawal from the NPT in January 2003 meets the above criteria. The DPRK has repeatedly stated that its security and regime stability has been threatened by the USA and therefore its withdrawal could be seen as “related to the subject matter of the NPT” since in the NPT’s preamble it is stated that “States must refrain in their international relations from the **threat** or use of force **against the territorial integrity or political independence of any State**”.

The question is then what constitutes such a **threat** and can it reasonably be considered to “have jeopardized the supreme interest of [the] country?”

One might argue that this question is irrelevant since it is for the State party to the NPT, and no one else, to “decide” that this is the case. If this is so and based on the reasons invoked by the DPRK to justify its withdrawal from the NPT, it would appear that a number of other States party to the NPT could construct a similar justification to withdraw from the Treaty. If this were to happen the credibility of the non-proliferation regime might be severely undermined.

Even if one does not dispute the right of a State party to the NPT to decide that extraordinary events justify its withdrawal from the Treaty, nothing would prohibit the international community from deciding what kind of **automatic** response should be made in such a case.

Past experience has shown that for circumstantial political reasons any permanent member of the UNSC can block a response to such a threat to international peace and security. The fact that, more than two years after the DPRK’s de facto withdrawal from the NPT, there has been no response from the UNSC, has created a precedent that is a matter of great concern and should be corrected.

It is therefore important that the international community addresses this issue as a matter of priority. One way could be for the UNSC to adopt a generic resolution, under Chapter VII of the UN Charter and independently of any specific case, on a minimum but predetermined set of stepwise responses to any withdrawal from the NPT.

Clearly it will be difficult to reach consensus on such an approach, but only then can one expect, as recommended by the Director General of the IAEA, “the UNSC to act swiftly and decisively in the case of any country that withdraws from the NPT”.

Conclusion

“The recent experience of the IAEA in verifying undeclared nuclear programmes has yielded a number of important lessons. One such lesson is that when international inspectors are provided adequate authority, aided by all available information, backed by an effective compliance mechanism, and supported by international consensus, the verification system is able to provide credible, impartial information to decision makers that would not otherwise be available”.⁵ It should therefore be a priority for the world community to increase, in specific cases, the IAEA verification authority in a State that has been found to be in non-compliance with its non-proliferation commitments. It is also important to agree on the appropriate response in case a State decides to withdraw from the NPT.

The level of awareness worldwide that the nuclear non-proliferation regime needs to be further strengthened has seldom been as high. It has recently prompted a considerable number of proposals to directly or indirectly reinforce the regime, including those by U.S. President G.W. Bush, IAEA Director General Mohamed ElBaradei and UN Secretary General Kofi Anan’s High Level Panel on Threats, Challenges and Changes.

The challenge now facing the international community is to reach, during the coming NPT Review Conference, the broadest possible consensus on those additional measures that need to be implemented as a matter of priority so that the world can safely enjoy the benefits of the peaceful use of nuclear energy without adding to the danger of nuclear weapons proliferation.

⁵ G. Andrew, Special Assistant to the Director General of the IAEA. “Nuclear non-proliferation: changes and challenges”. Woodrow Wilson Center, Washington D.C. 10 December 2004.