

CHAPTER 9

THE NUCLEAR NON-PROLIFERATION REGIME: AVOIDING THE VOID

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Alexis de Tocqueville (1805-59) stated: "In politics what is often most difficult to understand and appraise is what is taking place under our eyes." De Tocqueville's insight suggests that it would be wise for the international community to stand back and to reflect on the lessons that should be learned from the International Atomic Energy Agency's (IAEA) experience in implementing safeguards over the last decade, particularly in North Korea and Iran. Such review and reflection will readily suggest that, ironically, just when the safeguards are getting better, the political will to use them effectively seems to be waning. Unless the IAEA is given the authority and tools to implement safeguards effectively and soon, the future of a rules-based approach for managing nuclear technology will dwindle and the prospects for sharing more widely the benefits of peaceful nuclear energy with developing countries may drop dramatically.

This chapter will explore how safeguards have gotten better, what lessons can be gleaned from the IAEA's experience over the last decade, and what solutions to the problems presented can be implemented by the international community.

I. SAFEGUARDS ARE GETTING BETTER

The IAEA safeguards system is being implemented more effectively and efficiently than ever before.

Traditionally, the IAEA focused on accounting for nuclear materials in a state facility-by-facility. This work was done only at declared facilities and was largely an audit. Since 1998, however, the IAEA has developed a global analytical approach that asks not simply whether the declared numbers add up, but also, "What's going on in this state's nuclear program? Is everything really consistent?"

At the heart of this approach is the production and periodic update of state evaluation reports (SERs) and of a corresponding action plan. SERs combine the results of inspections in the field and environmental swipes with analysis of all relevant information from open sources, including satellite imagery. State evaluation reports analyze the history of all anomalies and inconsistencies recorded during previous inspections. They examine whether a state's research and development program is internally consistent, corresponds with stated purposes, and points to a commitment to use nuclear technology exclusively for peaceful purposes. The SERs analyze export and import notifications regarding relevant nuclear material and equipment, and other information available to the IAEA. Every SER also includes a section that examines the most likely diversion scenarios, on the assumption that the state under review intends to divert nuclear material for military purposes.

Parallel with these developments, the IAEA has replaced almost all analog video cameras with digital surveillance cameras. Implementation of remote monitoring has increased from 14 systems in 2000 to 86 multicamera systems in 2004, and this trend is continuing. Progress is also being made in using more advanced equipment such as ground penetration radar to improve the IAEA's ability to verify that highly

complex nuclear facilities conform to their official design. The IAEA has also established a new research and development (R&D) project to explore, with the support of member states, the potential use of advanced technologies in detecting undeclared nuclear material and activities.

In addition, in response to the discovery in 2004 of an extensive covert supply network of sensitive nuclear technology that came to light as a result of Libya's disclosure of its clandestine nuclear weapons program, the IAEA Department of Safeguards has established a new unit focused on documenting, investigating, and analyzing nuclear trade activities worldwide, with the aim of uncovering the existence of undeclared nuclear activities.

This more rigorous and resourceful approach to safeguards has led one knowledgeable commentator (Richard Hooper, *IAEA Bulletin*, June 2003) to assert in 2003 that "changes in structure and practices of the Safeguards Department have been accompanied by a change in culture that is more of a revolution than evolution." This "radical departure from the past practice" has also been acknowledged in the U.S. Government Accountability Office report of October 2005 on nuclear nonproliferation.

To be sure, there are still problems inherent in ensuring that, in "bulk facilities," even small amounts of nuclear material – a few kilograms among tons – are not diverted without timely warning, but the trend in the capacity of the safeguards system is clearly positive.

Unfortunately, the international community has failed to strengthen the authority of the IAEA to exercise its improved capacity in precisely the situations where it is most necessary: when a state has been found to be **in non-compliance** with its safeguards undertakings.

II. THE CASE OF NORTH KOREA

A. Summary of the IAEA's Experience with North Korea.

Soon after North Korea, formally the Democratic People's Republic of Korea (DPRK), concluded a comprehensive safeguards agreement (CSA) with the IAEA in 1992, the IAEA found the country to be in non-compliance. In 1993 North Korea gave notice of its withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as permitted under Article X. Negotiations between the United States and North Korea concluded in October 1994 with an "Agreed Framework," which averted a looming military-security crisis by inducing North Korea to freeze activity of its graphite-moderated reactors and related fuel cycle facilities in exchange for a U.S. commitment to deliver two 1,000-megawatt light water reactors (LWRs) and, in the meantime, to supply annually 500,000 tons of oil to meet heating and industrial needs. As part of this deal, North Korea remained a party to the NPT and the IAEA maintained a permanent presence monitoring the agreed freeze on nuclear activities.

The Agreed Framework, however, contained two provisions that sowed the seeds of the present potentially dangerous stalemate. First, it contained a clause that was interpreted by North Korea as limiting the IAEA's inspection rights under the CSA until such time as a significant portion of the LWR project was completed. Only then would the IAEA be allowed to take all the steps deemed necessary to verify "the accuracy and completeness of the DPRK's initial report on all nuclear material in the DPRK." Such limitation

was clearly inconsistent with the lessons learned in Iraq that demonstrated that the IAEA needed greater access rights than those under the CSA and not the fewer rights embodied in the Agreed Framework.

The second flaw of the Agreed Framework was that it allowed North Korea to retain in storage all of its spent fuel containing weapons-grade plutonium and to maintain a reprocessing facility in a state of readiness so that North Korea could restart operations at any time. Only after completion of the LWR project would these facilities have to be dismantled. The U.S. negotiators and others recognized this flaw but could not persuade North Korea to remove it.

Because of the limitations in its inspection rights, the IAEA was unable to confirm that North Korea's initial declaration under its CSA was correct and complete. Therefore, every year **for 10 years**, North Korea was declared by the IAEA Board of Governors to be **in non-compliance** with its safeguards agreement. However, no additional penalties were imposed by the international community as a result of these declarations of non-compliance.

In 2002, the United States claimed to have discovered evidence that North Korea was developing an undeclared uranium enrichment program and, as a consequence, suspended the delivery of fuel oil under the Agreed Framework. In retaliation, North Korea expelled the IAEA's inspectors at the end of 2002 and withdrew from the NPT in January 2003. North Korea then reprocessed 8,000 (or more) spent fuel assemblies, and in 2004 declared that it possessed nuclear weapons.

Still, there have been no tangible consequences for these actions by North Korea beyond the isolation the country already experienced. China delivered substitute fuel oil to North Korea and threatened to

veto any resolution of the United Nations Security Council (UNSC) adverse to North Korea. The six parties' talks initiated in 2003 have so far been chaotic and unproductive. As a result, 3 years after the IAEA inspectors were expelled from North Korea, they are still not allowed to return, and North Korea most likely has nuclear weapons. Meanwhile, the international community has not decided whether, from a procedural and legal point of view, North Korea has withdrawn from the NPT. This may sound like the discussion among religious scholars in 1453 on the sex of the angels while the Byzantine Empire was falling apart around them, but in actuality, knowing whether North Korea has or has not withdrawn from the NPT is more than an academic question.

If North Korea's withdrawal is acknowledged, then the IAEA should implement a limited safeguards agreement (INFCIRC/252) signed in July 1977 to verify a five megawatt thermal (MWth) research reactor delivered by the Soviet Union. This safeguards agreement, unlike a CSA, does not terminate when a state withdraws from the NPT. What could be verified there would, of course, be very limited, but it would be a matter of principle with potentially important consequences. If implemented, it would maintain at least a formal channel of communication between the IAEA and North Korea.

B. The Lessons Learned.

The three main lessons learned from the experience with North Korea are:

1. If a state withdraws from the NPT, any comprehensive safeguards agreement automatically terminates, and all nuclear materials and facilities are

no longer under safeguards and can be used freely and legally for a nuclear weapons program.

2. The threat of any permanent member of UNSC to use its veto right can block (for political, circumstantial reasons) any resolution adverse to a state withdrawing from the NPT.

3. A “voluntary, not legally binding freeze” of nuclear facilities gives no long-term guarantee that a state will not use them in the future.

C. What Are the Remedies?

The right to withdraw from the NPT remains a sovereign right. However, in order to minimize the consequences of such a withdrawal, the UNSC should adopt a **generic** resolution stating that, as a matter of principle, if a state is found by the IAEA to be in **non-compliance** with its safeguards undertakings **and** withdraws from the NPT **before** the IAEA has concluded (1) that its declarations are correct and complete; **and** (2) that there are no undeclared nuclear materials and activities in that state; **such a withdrawal constitutes a threat to international peace and security under Article 39 of the Charter of the United Nations.**

This **generic** resolution should also decide under Chapter VII of the UN Charter that any materials and equipment made available to such a state, or resulting from the assistance provided to that state, under a comprehensive safeguards agreement (INFCIRC/153-Corrected), will be removed from that state under IAEA supervision within 60 days of any notice of withdrawal from the NPT given by that State under Article X.1 of the NPT, and will remain under IAEA safeguards.

A withdrawing state should not be entitled to the benefits acquired while it was a party to the NPT and

subject to comprehensive safeguards. This principle is not new. It is already contained in the IAEA Statute adopted in 1957, 13 years before the NPT came into force. Article XII.A.7 of the Statute states that “With respect to any Agency project, or other arrangement where the Agency is requested by the parties concerned to apply Safeguards, the Agency shall have the right . . . in the event of non-compliance **and** failure by the recipient State . . . to take requested corrective steps **within a reasonable time**, to suspend or terminate assistance and **withdraw** any materials and equipment made available by the Agency **or a member** in furtherance of the project” (emphasis added).

All nuclear-supplier states should also, in their bilateral nuclear supply agreements, reserve the right to require the return of all nuclear material and equipment previously supplied, in the event the recipient state withdraws from the NPT. One should bear in mind that withdrawing from the NPT is an option that Iraq has never threatened to use but that has been considered at the highest level of the Iranian leadership. The international community should not wait for the next crisis to happen before taking the appropriate preventive measures.

III. THE CASE OF IRAN

A. The Lessons Learned.

Without attempting to summarize here the findings of the IAEA with regard to Iran’s previously undeclared nuclear activities contained in nine Reports to the Board of Governors and additional statements by the IAEA Deputy Director General for Safeguards (DDG-SG), suffice it to say that from these reports as

well as eight Board Resolutions, one can draw three lessons: the need to avoid delaying tactics, the need to look beyond nuclear material, and the need to enforce transparency, each of which are more fully elaborated below.

1. The need to avoid delaying tactics.

In November 2003, Iran was found to be “in breach of its obligation to comply with the provisions of its safeguards agreement.” This is synonymous to “non-compliance” and should have been reported to the UNSC as foreseen in Article XII.C. of the IAEA Statute. It was not reported mainly for two reasons. On the one hand, because of the fear of many member states that if the issue got out of the IAEA’s hands and was reported to the Security Council, it would inevitably mean sanctions against Iran and that sanctions would lead nowhere except to another Iraq-like crisis which might well be a worse one. On the other hand, some member states feared that Russia and China could veto any resolution of the UNSC adverse to Iran. The worse would be for the IAEA to report Iran to UNSC only to have the issue blocked there, as was the case for North Korea, with no concrete outcome.

In October 2003, one month before the meeting of the IAEA Board of Governors, in order not to be referred to the Security Council, Iran agreed in Tehran with the EU-3 (France, Germany and the United Kingdom) to sign the Additional Protocol,¹ to implement it pending its ratification, and “to suspend all uranium enrichment and reprocessing activities as defined by the IAEA.” However, less than 7 months later, on June 18, 2004, the Board of Governors adopted a resolution in which it deplored the fact that “as indicated by the Director

General's written and oral reports, Iran's cooperation had not been as full, timely and proactive as it should have been." And on September 18, 2004, the Board of Governors deeply regretted "that the implementation of Iranian voluntary decisions to suspend enrichment-related and reprocessing activities . . . fell significantly short of the Agency's understanding of those commitments and also that Iran has since reversed some of those decisions."

In November 2004, once more to avoid being reported to the UNSC and to gain time, Iran signed an agreement with the EU-3 in Paris, by which it decided, on a voluntary, not legally binding basis, to extend its suspension "to include all enrichment related and reprocessing activities" and "all tests or production at any uranium conversion installation." It was further stated that "the suspension will be sustained while negotiations proceed on a mutually acceptable agreement on long-term arrangements." However, on August 1, 2005, one day before receiving the EU-3 proposal, Iran announced its decision to resume uranium conversion activities.

So what is the situation today? Three years after the IAEA February 2003 visit to Natanz and the discovery of Iran's extensive undeclared nuclear program, there are still a number of outstanding questions due in large part to Iran's delaying tactics in providing access to locations, individuals and documents. As a result of these delaying tactics since the discovery of the Arak and Natanz sites in August 2002 and notwithstanding the Tehran and Paris suspension agreements with the EU-3:

- Iran has completed its conversion facility at Esfahan and produced a large quantity of uranium hexafluoride (UF₆).

- Iran has introduced UF₆ in the pilot enrichment plant at Natanz in June 2003, installed a 164-machine cascade by October 2003, manufactured more centrifuge components (1,274 assembled rotors at Natanz by October 2004), carried out work for the installation of the large underground enrichment facility at Natanz, and recently announced that it was resuming R&D-related enrichment activities.
- Iran is pursuing at full speed the construction of its heavy water research reactor, ignoring repeated requests by the IAEA Board of Governors to suspend it. This is of particular concern because the spent fuel of such a reactor will contain weapons grade plutonium.

On July 31, 2005, Dr. Hassan Rowhani, at the time Secretary of the Supreme National Security Council, presented his “performance report” to outgoing President Khatami. Referring to the Paris agreement of November 2004, he stated: “Since Iran had at that juncture completed its structural capabilities in the fuel cycle sector, it was possible to suspend the enrichment for a period of several months without making any fundamental damages to the fuel production project.” There could be no clearer admission of the on and off strategy being followed by Iran.

2. The need to look beyond nuclear material.

The Director General’s November 2004 report stated: “It should be noted that the focus of Agency Safeguards Agreements and Additional Protocols is nuclear material, and that, absent some nexus to nuclear material, the Agency’s legal authority to pursue

the verification of possible nuclear weapons related activity is limited.” The limitation of the IAEA’s focus on nuclear material is a major issue that has not been properly addressed by the international community. Much more than nuclear material is needed to build a nuclear weapon. Nuclear weaponization activities not involving nuclear material can be numerous and detectable.

Under a narrow legal interpretation of the IAEA’s mandate and authority expressed by the language quoted above, effectively requiring **proof** that undeclared nuclear material and activities are related to a nuclear weapons program, the IAEA would have to find at least traces of nuclear material at an undeclared facility that can clearly be linked to equipment, material, or activities that could **only** be relevant to manufacturing nuclear weapons or other explosive devices. Such a narrow interpretation establishes a sleuthing standard that IAEA inspectors could hardly ever meet, and if such an interpretation prevails, the international community will be made ever more vulnerable to proliferation. A broader interpretation, certainly justified under the Agency’s mandate to verify that nuclear material is not diverted to nuclear weapons or other nuclear explosive devices, which sees the Agency as having the authority to look beyond nuclear material itself, is the only interpretation under which the Agency can fulfil its mandate effectively.

Consider the limitations under the narrow interpretation. The sensitive equipment, material, and activities involved in a nonexclusively peaceful nuclear program would most likely be located at secret military sites. Yet, it is difficult, if not impossible, for the IAEA to access such sites **in a timely manner** under the standard CSA and even the Additional Protocol.

Experience has demonstrated that so many limitations can be imposed on IAEA inspectors when they get to such sites, that it is extremely unlikely that they would be able to **prove** that nuclear materials have been diverted to the manufacture of a nuclear explosive device. Even if such a conclusion could be drawn, it would likely be so late in the process of manufacturing nuclear weapons that it would be too late to deter the state from withdrawing from the NPT.

It is therefore essential for the IAEA to be understood to have the mandate and the authority to look for **any indication** that a non-nuclear-weapon state may be undertaking activities that could signal the existence of a nuclear weapons program, and to report such findings to the IAEA Board of Governors. It is encouraging to note that the IAEA Secretariat is progressively heading in that direction.

If a state intends to develop a nuclear-weapons capability it will need:

- to produce or acquire highly enriched uranium and/or weapons grade plutonium,
- to master all the necessary weaponization techniques, and
- to manufacture or acquire the required means of delivery.

There are indications that Iran is progressing on all three fronts. The following is known about Iran's weaponization activities and delivery-means, which go beyond its nuclear fuel cycle activities.

With respect to weaponization activities, the Director General's report to the IAEA Board of Governors dated November 18, 2005 (GOV/2005/87) indicates that among the documents received by Iran from intermediaries in 1987 was one related to

“the casting and machining of enriched . . . uranium metal into hemispherical forms.” Such a process has no peaceful application and therefore represents a substantial indication that Iran has been (and may still be) interested in developing a nuclear weapons capability. The DDG-SG also reported on January 31, 2006, that the Agency had information about tests related to high explosives that could have a military nuclear dimension. In addition, efforts by the Physics Research Center (an organization related to the Iranian Ministry of Defense that was located until 1998 at the now razed Lavizan-Shian site) to acquire dual use materials and equipment that could be used in uranium enrichment and conversion activities, is another relevant indication. Interestingly, a commentary published on February 12, 2006, in the conservative Iranian daily *Keyhan* argues that “benefiting from the knowledge of and ability to manufacture nuclear weapons is something different from the triple issues of producing, storing, and using such weapons. However if necessary . . . then the ground will be paved for moving toward the subsequent phases.”

With respect to delivery means, it should be noted that aside from the five nuclear weapons states and the three non-NPT states, only three countries: North Korea, Saudi Arabia, and Iran, are known to possess medium to long-range ballistic missiles capable of carrying a payload of 1,000kg or more, sufficient for a nuclear warhead. In his briefing dated January 31, 2006, to the IAEA Board of Governors, the DDG-SG indicated that Iran rejected a request to discuss information available to the Agency about “the design of a missile re-entry vehicle . . . which could have a military nuclear dimension.”

3. The need to enforce transparency.

Not only must the IAEA's evidentiary lens be widened, the transparency measures for which it calls must be made enforceable. The Director General in his report of September 2, 2005 to the IAEA Board of Governors states:

In view of the fact that the Agency is not yet in a position to clarify some important outstanding issues after two and a half years of intensive inspections and investigation, **Iran's full transparency is indispensable and overdue.** Given Iran's past concealment efforts over many years, such transparency measures should extend beyond the formal requirements of the Safeguards Agreement and Additional Protocol and include access to individuals, documentation related to procurement, dual use equipment, certain military owned workshops and research and development locations. **Without such transparency measures, the Agency's ability to reconstruct, in particular, the chronology of enrichment research and development, which is essential for the Agency to verify the correctness and completeness of the statements made by Iran, will be restricted** (emphasis added).

Since 2003 the IAEA Board of Governors has adopted a half dozen resolutions calling on Iran to be more transparent and cooperative. In its last resolution of September 24, 2005, the IAEA Board of Governors "urges Iran to implement transparency measures, as requested by the Director General in his report."

Unfortunately, such requests by the Board of Governors have no legal force and effect and do not allow IAEA inspectors to obtain broader access to individuals, documents, or locations.

B. What Are the Remedies?

The single most effective and feasible way to establish the necessary measures is for the UNSC to adopt a **generic** and binding resolution stating that if the IAEA finds a State in non-compliance **and** requests increased verification authority, the UNSC would automatically adopt a **specific** resolution (under Chapter VII of the UN Charter) providing this additional authority until the IAEA has concluded that there is no undeclared nuclear material and activity in that State and that its declarations are correct and complete. If such a **generic** resolution existed in November 2003, it may well be that the IAEA Board of Governors would not have been afraid to declare Iran in non-compliance and would have reported Iran to the UNSC **for the sole purpose** of requesting such broader verification authority, which clearly has nothing to do with sanctions.

Such a **generic** resolution should also request the non-compliant state to **suspend** all sensitive nuclear fuel cycle activities at least until the Agency has been able to draw the above mentioned conclusion, or, possibly, for automatically renewable periods of 10 years unless otherwise decided by the UNSC. This would be what Dr. ElBaradei has called a “rehabilitation period” or a “probation period, to build confidence again, before you can exercise your full rights.” (cf. interview with *Newsweek*- January 23, 2006)

Independently, the Nuclear Supplier Group could adopt a rule whereby nuclear material and equipment would only be exported if the facilities where they are to be stored or used are covered by both a comprehensive safeguards agreement and an INFCIRC/66-type

safeguards agreement. This requirement would block a recipient state from withdrawing from the NPT and claiming the right to do whatever it wants with the items previously delivered or the materials derived therefrom.²

IV. CONCLUSION

The IAEA Statement at Main Committee II of the NPT Review Conference in May 2005, states:

As underlined by the Director General in his opening statement, our verification efforts must be backed by an effective mechanism for dealing with cases of **non-compliance** with Safeguards Agreement or of **withdrawal** from the NPT. For this, both the NPT and the IAEA Statute make clear our reliance on the Security Council to promptly consider the implications of such cases for international peace and security and to take appropriate measures.

As suggested in this chapter, concrete measures can readily be taken within the IAEA and UN framework to improve the assurance that all nuclear material and activities in a non-nuclear-weapon-state **found to be in non-compliance** are and remain exclusively for peaceful purposes. The UNSC can take these vital generic measures without eroding state sovereignty or development. The measures proposed here would apply **only** when the highly representative IAEA has found a state to be in **non-compliance** with its safeguards obligations. None of these measures would impede a state's right or capacity to enjoy the peaceful uses of atomic energy. On the contrary, these measures would quicken the international community's capacity to regain confidence that a state that may have

wandered off the peaceful nuclear path had corrected its course and would once again be a reliable neighbour and business partner.

Without UNSC action of this sort, the future of a rules-based approach for managing nuclear technology will dwindle, and the prospects for sharing the benefits of peaceful nuclear energy more widely with developing countries may drop dramatically. Inaction is playing against the credibility of the NPT regime.

As Cardinal de Richelieu once said: "Politics is the art of making possible what is necessary."

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1. The Model Additional Protocol, INFCIRC/540 (corrected) approved by the IAEA in March 1997 provides for increased reporting by a state on its nuclear fuel cycle related capabilities and activities and expanded short notice IAEA access to nuclear-related locations.

2. A CSA remains in force only for so long as the state remains party to the NPT, whereas under a INFCIRC/66-type agreement, all nuclear material supplied or produced under that agreement would remain under safeguards even if the state withdraws from the NPT until such time the IAEA has determined that such material is no longer subject to safeguards.