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Strengthening Safeguards Authorities and Institutions

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ABSTRACT

The International Atomic Energy Agency (IAEA) safeguards system has changed in major ways from the establishment of the IAEA in 1957 until the present. Changes include strengthening the legal framework of safeguards; improvements in concepts and approaches for safeguards implementation; and significant improvements in the technical tools available to inspectors. In this paper, we explore three broad areas related to strengthening safeguards authorities and institutions: integrated safeguards and State-Level Approaches; special inspections; and NPT withdrawal and the continuation of safeguards.

INTRODUCTION

The IAEA safeguards system has undergone continued change in focus, scope, and capability from the establishment of the IAEA in 1957 until the present. Its initial focus was primarily on detecting the diversion of declared nuclear material, but events in Iraq in 1991 demonstrated that a broader approach was needed. These events initiated a series of changes, which: clarified existing authorities; broadened the scope and type of information required to be reported (ranging from R&D not involving nuclear material to exports of non-nuclear material); and defined a new type of access, complementary access, which provides additional assurance of the absence of undeclared activities at declared locations but can potentially take place at any location in a State.

In terms of existing authorities, especially important steps were: (1) the affirmation by the Board of Governors that safeguards under comprehensive safeguards agreements (CSA) should ensure the "correctness and completeness" of states' declarations and be designed to provide "credible assurance of the non-diversion of nuclear material from declared activities and of the absence of any undeclared activities;" and (2) reaffirmation by the Board of Governors of the Agency's right to undertake special inspections, while at the same time anticipating that their use "should be rare."

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The most important new authorities, including complementary access and the reporting of nuclear fuel cycle information, were incorporated in the Model Additional Protocol (AP) (INFCIRC/540), which also established a well-defined process for resolving "questions" or "inconsistencies" about the completeness and correctness of States' declarations and for obtaining complementary access.

In legal terms, the IAEA has moved from INFCIRC/66 safeguards agreements, which apply safeguards to specific listed items; to CSA, which apply safeguards to all nuclear material in all peaceful nuclear activities; to CSA plus an AP, which together cover the full peaceful nuclear fuel cycle and include complementary access rights whose purpose includes detecting undeclared nuclear material and activities.

This evolution has led to a comparable transformation in the ways in which safeguards are implemented and conclusions are drawn and reported. New safeguards processes pose challenges for the inspectorate to acquire, analyze, and assess information in a credible and cost-effective manner. They also place new demands on States, which under the expanded declaration of the AP must provide the IAEA with more information, including types of information not previously included in a traditional State System of Accounting and Control (SSAC) for nuclear material.

Revelations about clandestine networks that traffic in proliferation-sensitive equipment, materials, and information demonstrate that many states not considered as "supplier states" can, in fact, contribute to proliferation. They also demonstrate the importance of adopting appropriate controls in order to help reduce the risk of proliferation.

Events in Iraq in the 1990s and, more recently, in Libya, Iran, and Syria also highlight the importance that IAEA have robust capabilities to investigate violations of safeguards agreements. In addition, where violations have been confirmed, the IAEA should be in a position to provide assurances that they have been rectified and to help to provide confidence over time that ostensibly peaceful nuclear activities are in fact so.

Clearly, the risk of States violating the terms of safeguards agreements is not hypothetical. States might also violate provisions of the Nuclear Nonproliferation Treaty (NPT) beyond those dealing with safeguards. The very real possibility also exists, e.g., DPRK, that states can withdraw from the NPT. While the IAEA is not charged with detecting or rectifying violations of the NPT, other than in connection with its safeguards agreements, NPT withdrawal does raise important questions relevant to IAEA, especially if a State withdraws from the NPT while in violation of a safeguards agreement.

INTEGRATED SAFEGUARDS AND THE STATE-LEVEL APPROACH

As the authorities of the safeguards system were clarified and expanded, it has been particularly important for the IAEA to adopt new measures and approaches to provide assurance of the absence of undeclared nuclear material and activities in the State as a whole. Integrated Safeguards (IS), i.e., using the optimal combination of safeguards measures available under both CSA and an AP, and the State-Level Approach (SLA)

have emerged as natural concomitants of the transformation of safeguards described above, and their implementation poses new challenges.

Under the IS concept, the Secretariat evaluates the compliance of a Member State with a CSA and an AP with a view to drawing the conclusion that *all* nuclear material remains in peaceful activities in the State. When such a conclusion is drawn, the Secretariat develops a specific IS approach for the State that takes advantage of the increased assurance of the absence of undeclared activities available from new measures to reduce field inspection effort, e.g., less frequent interim inspections, random selection of facilities to be inspected from a set of facilities, and lower detection probability goals.[2]

Like IS, the SLA is intended to take best advantage of IAEA resources and to provide the IAEA with the flexibility needed to allocate them appropriately. It moves beyond a facility-focused checklist system offering greater flexibility to deal effectively with the challenges of detecting undeclared nuclear materials and activities in a State.

In contrast to the traditional check-list approach, the SLA builds on a careful and structured analysis of all aspects of an *individual* state's nuclear activities and the nuclear weapon materials and technologies acquisition paths available to it that is embodied in the State Evaluation Report (SER). The SLA envisions safeguards implementation via an Annual Implementation Plan (AIP) based on an SLA customized for each Member State.

The SLA is information driven, with a uniform analytical process applied to all states (a nondiscriminatory approach in which the same safeguards *objectives* are applied to all states), but allows for non-uniform *implementation* of safeguards at similar facility types in different states. In other words, the aim of the SLA is to differentiate between states without discriminating against them.

The state evaluation process documented in the SER provides the basis for adjustments to safeguards activities. The following are examples of factors that might be taken into consideration when performing the evaluation that can lead to changes in safeguards activities for a particular Member State:

> 1) Quality of the state system of accounting and control (SSAC),
> 2) Willingness of the state and its nuclear facility operators to employ safeguards measures such as unattended and remote monitoring (UNARM) or short-notice random inspections (SNRI) with timely "mailbox" declarations, and
> 3) Availability of information about the state's nuclear activities (which can come from the state, from open sources such as the internet and satellite imagery, or from third parties).

While information about specific States is not available, the Secretariat has suggested that overall reductions of the order of 15% of the in-field workload can be achieved. On the

[2] The 2006 SIR reports 32 Member States with the broader conclusion and of these, nine states with IS fully implemented and two states with IS initiated during 2006.

other hand, the IAEA foresees that headquarters evaluation activities will increase by up to 50% by 2030.[3]

Challenges

Credibility and Transparency of the SLA: Safeguards planning, implementation, and evaluation based on a technically sound and politically transparent SLA process will be essential to addressing the safeguards challenges of the future. A well-developed and well-executed SLA/AIP/SER process will not only guide safeguards but also strengthen the overall nuclear material management regime in support of measures to combat nuclear terrorism and clandestine procurement networks. It will also help to define the measures needed to detect undeclared nuclear material and activities. The process needs careful definition, which must be communicated transparently and precisely to Member States in order to avoid creating the appearance that the IAEA safeguards system is discriminatory or ineffective. This includes noting the differing levels of confidence regarding the IAEA's ability to detect undeclared materials and activities at declared sites versus anywhere in the State. In addition, the three IAEA Operations Divisions should apply the SLA process using consistent procedures and standards.

Strengthening and Broadening SSACs: The strength of the IAEA's conclusions depends importantly on the timeliness and completeness of States' reporting to the IAEA of requisite information. States should have in place effective legal and regulatory frameworks that require correct and complete reporting of their relevant activities. But the broader Agency mission and the AP's expanded declaration poses a new challenge for the IAEA and for Member States. For nuclear material reporting, the IAEA conducts independent measurements through which it can assess the quality of the SSAC for nuclear material. How the IAEA should address the quality of the State's reporting in other areas is not as straightforward. Better understanding is needed of how the IAEA can establish confidence in the data elements of the expanded SSAC. For many Member States, there is also the need to put in place or to strengthen the capacity to provide the necessary information to the IAEA. The SLA/AIP/SER and Safeguards Implementation Report (SIR) processes should be reviewed to identify how best to use them to strengthen SSACs, including States' abilities to meet their obligations under APs and to improve safeguards implementation. In addition, there is a continuing need for States to provide information to the IAEA on a voluntary basis, as recommended by the Board of Governors. Finally, there will be a continuing need to assess the information requirements of the IAEA and to adjust existing reporting arrangements as appropriate.

Safeguards Resources: The Agency faces both short- and long-term budget issues because of the increase in the number of facilities, the enlarged scope of safeguards (e.g., the AP, the new Small Quantities Protocol (SQP), SERs, etc.), and the possible application of new/additional safeguards in nuclear weapon states (NWS). Analyzing and evaluating how to establish priorities for allocating safeguards resources to detecting diversion at declared facilities, detecting undeclared facilities, and implementing safeguards in NWS and, perhaps at additional facilities in India will remain a continuing challenge.

[3] 20/20 Vision for the Future, Background Report by the Director General for the Commission of Eminent Persons, February 2008

If there is a continued squeezing of resources, the IAEA will need to be particularly careful to avoid a number of risks, for example: reducing inspection effort at declared facilities in such a fashion that a clear link between inspection measures and conclusions is lost; incomplete coverage of credible diversion paths; or turning to dubious mechanisms (highly infrequent random inspections) to address declared facilities. This is the downside of the flexibility allowed by the SLA.

Implementation Issues: In addition to these challenges, the emergence of a nuclear renaissance and a renewed interest in multinational fuel cycle centers raise the questions of how to use the SLA process to design safeguards approaches for sensitive fuel cycle facilities in the context of multinational fuel cycle centers and related concepts.

SPECIAL INSPECTIONS

As noted above, recent history has demonstrated the fact that States have failed to declare all of their nuclear activities. Thus, important questions are: How should the IAEA respond to indications of undeclared activities? what are the tools available? how should such tools be deployed? and what steps could be taken to strengthen the ability of the IAEA to take advantage of them?

For States with a CSA, one tool is the special inspection authority that is provided for in INFCIRC/153. It permits the Agency to obtain "access in agreement with the State to information or locations" in addition to what is provided for in the safeguards agreement.[4] The IAEA may carry out special inspections if it "considers that information made available by the State, including explanations from the State and information obtained from routine inspections, is not adequate for the Agency to fulfill its responsibilities under the Agreement." An inspection "shall be deemed to be special," when it is additional to routine inspection effort, or if it involves access to information or locations in addition to the access specified for ad hoc or routine inspections, or both.

However, the IAEA has made use of special inspections only rarely. One important reason is that compliance is the norm for almost all IAEA Member States, and resolution of anomalies or other safeguards concerns has been straightforward and successfully pursued on the basis of cooperation. On the other hand, the Agency has had to investigate instances of undeclared activities where it could have used special inspections to gain more access and/or information but instead labeled its inspection activities as technical visits, verification missions, or transparency visits -- labels that are not backed up by a specific legal authority.

Challenges

No matter the reasons for their infrequent use, there is a concern that continued reluctance or failure to make use of special inspections, or the perception that the IAEA is unwilling to use them, could undermine the Agency's ability to use them when needed, for example, in the event of serious violations. This "fact" or perception could also

[4] IAEA, "Safeguards Glossary: 11.14. Access for inspection," 2001 Edition, p. 71.

undermine States' willingness to cooperate with the Agency when it uses less formal methods.

We believe the IAEA's ability to conduct special inspections could be strengthened if States were to view them as a straightforward tool for it to use whenever routine inspections do not suffice. It is important to note in this connection that special inspections can be used to seek information and are not necessarily a request for access and that such requests might be more difficult to reject or deflect than less formal ones. The special inspection authority provides the only explicit, legal basis for requesting that a State provide information in addition to that which is required (even for States with an AP in force). Also, special inspections might still be a necessary tool at undeclared locations in AP States because they might allow access inside, and information about, certain locations where CA would only allow specified verification activities with limited or no access. Thus, the failure to make use of special inspections deprives the IAEA of a significant legal tool.

NPT Withdrawal and Continuation of Safeguards

Under Article X of the NPT, States Parties have the right to withdraw from the Treaty. When the withdrawal becomes effective, the relevant CSA as well as AP would terminate, and the formal obligations of the Treaty and the relevant NPT safeguards agreement no longer apply in that State. Clearly such withdrawals, particularly following violations of the NPT, could pose risks to the nonproliferation regime, and steps should be considered that could reduce these risks.

One key step is ensuring the continuation of safeguards in the event of withdrawal, which has been a topic of discussion during the NPT review process. At a minimum, safeguards would need to be applied where there are obligations that survive NPT withdrawal. These obligations could stem from bilateral supply agreements or from INFCIRC/66 safeguards agreements suspended following entry into force of an NPT CSA. Beyond that, different views have been expressed about the continuation of safeguards:

- Safeguards should continue on all imports to prevent the withdrawing State from taking advantage of those that it had acquired while it was a party to the NPT.
- Based on the perspective that all of a State's nuclear activities would have benefited from its NPT adherence, a more robust approach would continue safeguards on all these activities at the time of withdrawal.
- A somewhat different approach would be continuation of IAEA safeguards on sensitive material and facilities because unsafeguarded plutonium or HEU or the means to produce such material constitute a threat to international peace and security in the event of a State's withdrawal from the NPT.

In any event, all suppliers should endeavor to ensure that their cooperation does not support unsafeguarded nuclear activities in the event of a State's withdrawal from the NPT. To this end, all suppliers should incorporate in their bilateral supply arrangements a requirement that safeguards will be applied, even if an NPT safeguards agreement is terminated, under a new safeguards agreement on all transferred items and related technology transferred by the supplier or processed or produced or used in connection with such transfers. (This is along the lines of para 4a of NSG guidelines.) Return of all

such material in certain circumstances also needs to be included in supply arrangements, for example where appropriate safeguards arrangements could not be put in place. The UN Security Council and the Board of Governors of the IAEA might lend their weight to putting such arrangements in place.

Challenges

NPT Violation: A State that withdraws from the Treaty after violating its provisions should not be allowed to evade corrective action by the international community to deprive it of the benefits derived in violation of the Treaty while still a party to the NPT. While Parties have a right to withdraw from the Treaty, they do not have a right to profit from their violations. A violation could already be under investigation or could be discovered after the withdrawal notification is received.[5] There is strong support for not allowing a State to use withdrawal as a means to avoid accountability for its violations while a party to the Treaty.[6] While the accountability would depend on specific circumstances, it could include return of imported items, termination of supply or technical cooperation arrangements, or other steps to be decided at the time. NPT parties could insist on the continuation of IAEA safeguards until such time as the violation is redressed.

Scope and Duration of Safeguards: Regardless of which approach is considered, there is a need to define the desired scope of safeguards coverage. For example, many bilateral commitments apply both to the supplied item and to items produced or manufactured through the use of the supplied item. If accounting systems did not keep track of nuclear material by country of origin, it could be difficult to identify what items should be subject to safeguards. All supplier countries should insist on such accounting (as do Australia, Canada, and the US today). In the event of technology transfers, this could be even more difficult. A similar challenge would exist in connection with imported items. One way to reduce uncertainty would be for supply arrangements to include agreement that all facilities of the same type as the supplied facility would be deemed to be based on the supplied facility or technology. Consideration would also need to be given to how to address any items that were procured illegally.

In addition to the coverage of safeguards, the question of the duration of any continuing safeguards would need to be addressed. Obligations that survive NPT withdrawal will generally call for safeguards that last indefinitely, at least until the items are consumed or become no longer relevant to safeguards. In the other cases, ideally, coverage would be indefinite but consideration could be given to calling for safeguards for a fixed period of time, perhaps, ten years.

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[5] United Nations, "High-level Panel on Threats, Challenges and Change," (A/59/565), 2 December 2004, Para 134. "While the NPT provides the right of withdrawal from the Treaty, states should be urged not to do so. Those who withdraw should be held responsible for violations committed while still a party to the Treaty. A state's notice of withdrawal from the NPT should prompt immediate verification of its compliance with the Treaty, if necessary mandated by the Security Council. The IAEA Board of Governors should resolve that, in the event of violations, all assistance provided by IAEA should be withdrawn."

[6] For example, see working papers submitted to the 2005 NPT Review Conference (WP.32, submitted by Luxembourg on behalf of the European Union; WP.59 submitted by the United States; and WP.16, submitted by Australia and New Zealand.

The IAEA would have a continuing role if there were an outstanding safeguards violation at the time of withdrawal. The IAEA would also get involved in the event that a supplier State sought the establishment of a backup IAEA safeguards arrangement; if the suspension of existing safeguards agreements were lifted; or should the Security Council mandate an IAEA review of a withdrawing State's safeguards or NPT compliance.

To demonstrate its readiness, the IAEA BOG could approve a policy document that outlines the IAEA's authorities and responsibilities in the event of withdrawal, along with a list of ways the IAEA could assist in addressing the withdrawal action. Among the actions listed could be the willingness of the IAEA to do a compliance review of safeguards. The IAEA should also examine whether there are any suspended safeguards agreements that would be reactivated should the NPT safeguards agreement be terminated. The IAEA could be available for consultations with any nation that has supplied items to the withdrawing State and could call a special BOG meeting to approve any alternative safeguards arrangements that may not already be in force. The policy document could also outline the range of actions available to the BOG in the event a withdrawing State is in non-compliance with a safeguards agreement or is under investigation for possible non-compliance. It could discuss the kinds of engagement with NPT parties, for example through the NPT Review Conference process, that would be appropriate.

Conclusions

There is no doubt that the significant changes seen in the IAEA safeguards system have strengthened its ability to provide important nonproliferation assurances to the international community. Expanding the focus of the system to include the State as a whole is an important accomplishment, but challenges remain - technical, political, and institutional. These include potentially new roles for IAEA in providing supply assurances and applying safeguards at multinational facilities in NWS.

IAEA and Member States share the responsibility to ensure that the IAEA is in a position to draw appropriate conclusions that are technically sound and credible. The design and implementation of integrated safeguards and State-Level Approaches need to take into account a broad array of factors in an objective and nondiscriminatory manner. IAEA needs to ensure that it takes best advantage of the authorities that it has.

IAEA performance depends on the cooperation of States. All States should adopt Additional Protocols and bring required safeguards agreements into force. All States should put in place the safeguards and security infrastructures needed to implement safeguards agreements effectively and efficiently and to reduce the risks of terrorism and illicit trafficking. Only with robust cooperation that provides the IAEA with the information that it needs will all of the advantages of the State-Level Approach be realized.

Consideration needs to be given to addressing the situation that would emerge after a State's withdrawal from the NPT or its violation of a safeguards agreement. Steps can be taken now that would mitigate risks.