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Present Status and Future of International Safeguards

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(https://www.iaea.org/sites/default/files/styles/hd_1920x1080/public/default_images/statement-default.jpg?itok=E1vf14LB)

Ladies and gentlemen,

I am pleased to have the opportunity to meet with you in this forum and to talk about a subject that is recently very much in the public eye, namely, international safeguards. As you know, the IAEA's safeguards system verifies States' compliance with non-proliferation obligations undertaken by States party to the 1970 Treaty on the Non-proliferation of Nuclear Weapons (NPT) - and with other non-

proliferation agreements. The Agency's authority in NPT non-nuclear weapon States is based on "comprehensive safeguards agreements" which the States are required to conclude with the Agency.

The following gives an overview of the present status and future direction of strengthened international safeguards.

Since safeguards were first applied, the IAEA has continuously worked to enhance the effectiveness and efficiency of the safeguards system by the regular introduction of new approaches and techniques. Beginning in the 1970s, and for the following 25 years, our main verification activities were focussed on verifying that States had not diverted any of their "declared" nuclear material for non-peaceful purposes.

However, events in the early 1990s - including the discovery that Iraq pursued a completely clandestine programme to develop nuclear weapons despite the IAEA's successful verification of declared nuclear material - underscored the importance of strengthening the Agency's capability to detect undeclared nuclear material and activities.

With the support of the international community, a concerted effort was made in the 1990s to identify and implement measures to strengthen the safeguards system. This effort focussed on two aspects: measures that could be introduced under the legal authority of comprehensive safeguards agreements, and additional rights that were incorporated into a Model Protocol Additional to safeguards agreements, approved by the Board in 1997.

The strengthening measures include increased access to and evaluation of information, increased inspector access to nuclear-related locations, the use of advanced technology in safeguards and the review and strengthening of safeguards approaches, where needed. Although many new measures have been implemented to strengthen the Agency's capabilities and credibility, the Agency continues to strive for further improvements both to the effectiveness of

safeguards measures and their cost efficiency. Today I would like to highlight the accomplishments of the Agency in strengthening nuclear safeguards, and the areas of continuing improvements.

Information Evaluation

One of the most fundamental changes in IAEA safeguards implementation is the expanding role of ***information evaluation***. For non-nuclear weapon States with comprehensive safeguards agreements, the Agency seeks to determine whether any declared nuclear material has been diverted to non-peaceful purposes and whether there are any indications of undeclared nuclear material or activities. In addition to applying quantitative criteria for the verification of declared nuclear material, the Agency has developed the capability and infrastructure for evaluating information from a wide range of sources including: State reports and declarations, the results of Agency verification activities, and open and other sources. When drawing conclusions for each "State as a whole", all safeguards-relevant information regarding a State's nuclear programme is considered. In addition, overall State-level safeguards approaches, including the focus and intensity of safeguards activities for States with additional protocols in force, are driven by the results of the State evaluations. The activities associated with State evaluations have steadily increased since 1997.

One performance indicator is the increase in the number of State evaluation reports produced and reviewed by the interdepartmental Information Review Committee (IRC). As shown on the graph (/NewsCenter/Statements/DDGs/2003/goldschmidt12022003_graph.pdf) [pdf 14 KB] the number of reports produced each year has grown steadily since 1997. I would like to emphasize that each of the reports reflects a large effort in information evaluation especially for reports which include evaluation of additional protocol declarations. This number (highlighted in blue on the graph) is expected to almost double between 2002 and 2004.

To conduct thorough State evaluations the Agency has required access to more information. Some States have voluntarily supplied information requested by the Agency, such as information on closed-down and decommissioned facilities and

responses to questionnaires regarding their State System of Accounting and Control (SSAC). In addition, some States have undertaken voluntarily to provide information periodically, such as comprehensive reporting on exports and imports of nuclear material and exports of sensitive equipment and non-nuclear material (components of this scheme are incorporated into the Model Additional Protocol), and holdings and exports of separated americium and neptunium. Such information is extremely useful for providing transparency in the nuclear programmes of Member States and in assessing the consistency of information declared by the States. However, none of these is a substitute for the broader information supplied by States with additional protocols in force.

In order to effectively evaluate declared information, the Safeguards Department has developed an impressive capability for collecting, handling, analysing and archiving open source information, including commercial satellite imagery. The information technology infrastructure has grown and new sources of information are being integrated with our other verification data. Improving the effectiveness of this integration will be a key achievement of the re-engineering of our safeguards information systems which is currently underway.

Increased Inspector Access

The following highlights progress with regard to more effectively utilizing the rights of access to nuclear-related locations.

Under comprehensive safeguards agreements, inspection and design information verification (DIV) activities provide limited inspector access to nuclear material and facilities. Inspection activities can only be conducted at specified "strategic points" within declared nuclear facilities. Nonetheless, wherever possible, the implementation of inspections and design information verification activities has been strengthened. For example, unannounced and short notice inspections give added assurance of the absence of undeclared activities at facilities.

The Agency has also strengthened its implementation of design information examination and verification. States have been asked to accept an amendment to the General Part of their Subsidiary Arrangements (Code 3.1) to more explicitly

reflect the State's obligation to provide design information for new facilities at a very early stage. In addition, we have implemented procedures to conduct DIV activities regularly throughout the life of a facility (from construction through to decommissioning) to assure that the safeguards approach remains valid.

Only in States ***with*** additional protocols in force does the Agency have ***expanded*** rights to conduct complementary access to nuclear-related locations on short notice. Only with this greater access to information and locations can the Agency have sufficient confidence to draw conclusions on the absence of undeclared nuclear material and activities.

In some cases, State authorities have voluntarily allowed the Agency to visit nuclear related installations, beyond those required by the State's safeguards agreement. Such visits provide greater transparency with regard to a State's nuclear programme and improve the confidence in the safeguards conclusions drawn by the Agency.

Advanced Safeguards Technology

The following addresses the effectiveness, and in some cases efficiency, gains achieved by implementing advanced technology.

Environmental sampling was introduced in 1996 as a powerful new tool for detecting indications of undeclared nuclear activities. It is being fully implemented as a strengthening measure under the authority of comprehensive safeguards agreements but is limited to locations where inspectors have access during inspections and design information verification visits at declared facilities, particularly at installations with hot cells and at enrichment facilities. It has also proven to be a powerful tool when used during complementary access under additional protocols, where samples can be taken at a much wider range of locations.

The use of unattended monitoring systems reduces the need for human presence to conduct safeguards activities in the field. Many such systems are now being implemented and safeguards at the Rokkasho Reprocessing Plant will rely heavily

on that technology to reduce the need for inspector presence inside the facility, although more time will be needed at field offices and headquarters for review and analysis of the data.

Although suffering from a slow start due to the time needed to develop reliable equipment and implement cost-effective communication, remote transmission of verification data is now being implemented at several facilities worldwide in combination with unannounced or short notice inspections. The technology has now been proven and has led to savings in in-field verification activities where it has been implemented, such as in Switzerland and the Republic of Korea. However it must be noted that the cost effectiveness of implementing remote monitoring in additional facilities depends upon a variety of factors, including equipment and communications costs. Efforts are being made to further reduce these costs, e.g., by transmitting encrypted data over the Internet where possible. Also, more experience is still needed to fully assess the potential decrease in the reliability of equipment left unattended for extended periods of time, and the cost implications.

Strengthened Safeguards Approaches

The Agency has continued its efforts to strengthen and improve our safeguards approaches, where needed.

As noted earlier, in addition to facility level safeguards approaches, an increased focus is being given to formulating State-level safeguards approaches, particularly for States with additional protocols in force. This clearly gives us the flexibility to focus our efforts on the areas of greatest safeguards significance.

The Agency also continues to review the appropriateness and effectiveness of facility-level safeguards measures and approaches. For example, at several facilities the Agency has been analysing and attempting to reduce the amount of material unaccounted for (MUF). Implementation of improved accountancy measures and measurement techniques to reduce MUF has required a long term effort and close cooperation with facility operators and State authorities.

In addition, the Agency has recently revisited the safeguards approach for natural uranium conversion facilities where the Agency will more fully utilize its continuing right to conduct design information verification. As part of this effort, the advances in fuel fabrication and enrichment technologies were evaluated and on that basis the types of material that would be suitable as feed to those processes and therefore subject to further safeguards procedures have been updated.

Financial Impact

The changes that have been highlighted have come at a cost. The strengthening of safeguards has in many cases demanded more resources from the IAEA Department of Safeguards. There has been a significant increase in workload due to implementation of information-driven strengthened safeguards, for example for information collection and evaluation, analysis of satellite imagery, and development of new software and procedures for conducting State evaluations and implementation of additional protocols. This increase comes in addition to an increasing workload due to new facilities and changing conditions such as the increasing need to safeguard the transfer of spent fuel to dry storage.

The Agency has continued its efforts to introduce cost savings. To ensure that the measures of the additional protocol are not simply superimposed as a new layer of activity on top of our traditional safeguards measures, the IAEA has developed and begun to introduce optimised or integrated safeguards approaches for specific States. In countries with comprehensive safeguards agreements and additional protocols in force for which conclusions of non-diversion of nuclear material and the absence of undeclared nuclear material and activities have been drawn it is possible to reduce verification activities on in field declared nuclear materials. A preliminary analysis has been made of the potential savings in person days of inspection that could be realized with the implementation of integrated safeguards in certain facility types, namely LWRs, on-load reactors of the CANDU type and natural and low enriched uranium fuel fabrication plants in Japan, Canada and the EU. For the countries evaluated, the total savings anticipated under integrated safeguards is about 500 person-days of inspection, equivalent to a savings of about 7 person-years.

However, the savings already achieved as well as any further savings from integrated safeguards are far from sufficient to offset the increased requirements, particularly for human resources. Up until now, the Agency has managed to secure most of the needed additional resources for purchasing equipment and for contracts through increased extrabudgetary funding, which has exceeded in 2002 the level of 20% of the regular budget. This situation is not sustainable, it has been repeatedly criticized by Member States, as well as external consultants and it should be clear that extrabudgetary funding cannot help alleviate our need for more regular staff such as inspectors. The Agency is now making a concerted effort to secure an increased regular budget for the next funding cycle (2004-2005) sufficient to cover our requirements and reduce our excessive dependency on extra-budgetary resources from a small number of donor States. It is not clear yet whether or not we will be successful.

However, it cannot be over-emphasized that the Agency's safeguards activities are mandatory. The IAEA does not consider it an option to reduce its safeguards effectiveness in order to cut costs.

Conclusion

So, in summary, where do we stand today? It is clear that universalization of protocols additional to safeguards agreements would greatly contribute to international nuclear security. As explained, the Agency has introduced several measures to strengthen safeguards under comprehensive safeguards agreements. But unless a State has an additional protocol in force, the Agency will never have a sufficient basis on which to draw conclusions on the absence of undeclared nuclear material and activities for the States as a whole. The number of States that have ratified additional protocols is far below what was expected in 1997. At the time of writing this paper, although 67 States have signed additional protocols with the IAEA, only 28 have entered into force. There remain 19 NPT States with significant nuclear activities that have not even signed an additional protocol. With the help of some Member States, among which Japan has taken a leading role, the Agency is extending its efforts to encourage States to sign and ratify their additional protocols and to explain and provide assistance, where possible, on the steps needed to implement them.

Even for States with comprehensive safeguards agreements and additional protocols in force, there are limitations on the types of information and locations accessible to IAEA inspectors. Although there are mechanisms for obtaining the information needed to ascertain the completeness of State-supplied information, either from the State or from other sources, the process of completing consistency analysis needed for drawing credible conclusions is time consuming. Based on the Agency's experience, there is no doubt that transparency on the part of the State, such as the close cooperation of the State in promptly providing information necessary for the IAEA to develop a clear understanding of nuclear-related activities, saves time and resources and bolsters confidence in safeguards results.

It should be recognized that over the last 10 years, (i.e. since the discovery of Iraq's secret nuclear weapons programme), the commercial knowledge and technologies necessary to conduct a covert nuclear weapons programme have become more accessible, and the means to implement procurement, deception and concealment strategies, have become increasingly sophisticated. Although efforts have been made to strengthen the safeguards system, there is the risk that the ability of the Agency to discover in time evidence of a covert nuclear weapons programme will erode unless the Agency receives the necessary resources. After 15 years of a ZRG policy, it is therefore urgent to increase the safeguards regular budget by some $20 million in order to implement the measures needed to keep pace with safeguards challenges.

It is instructive to view the Agency's safeguards budget in relative terms. A total safeguards budget of just over 100 million dollars per year for an international inspectorate might be compared with the 300 million dollars allocated annually to the Vienna Police Department. The cost of the Gulf War of 1991, was equivalent, in 3 months time, to some 1000 years of the Agency's regular budget for Safeguards.

Effective IAEA safeguards remain the cornerstone of a nuclear non-proliferation regime aimed at stemming the spread of nuclear weapons and moving toward nuclear disarmament. Japan is one of the strongest supporters of the NPT regime. It is hoped that, in spite of its present economic and budgetary constraints, Japan

will join those Member States who favour a significant increase in the IAEA regular budget so that it can adequately fulfil its ever more challenging verification mandate.

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