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SHORT NOTICE INSPECTIONS

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INTRODUCTION

Inspections of nuclear facilities are the most important element of the IAEA Safeguards System. During an inspection the inspector receives direct verification results obtained with access to nuclear material, confirms correspondence of the real facility design to the declared one, evaluates data and makes any necessary technical service of IAEA containment and surveillance (C/S) equipment, and examines, on the basis of a study of source documents, the correctness of States' accounting reports. The planning and organising of inspections is defined by safeguards agreements, all inspector's activities are described in general terms in specific facility attachments. The full scope of the inspection (for physical inventory verification, for timely detection purpose or for other purposes) is given in the Safeguards Criteria for each of 12 nuclear facility types. It seems that everything is defined in advance, described and should not create any implementation issues.

However, it is precisely that pre-determined nature of inspections which is their main weakness. For instance, reactor facility operator and SSAC representatives know in advance, not less than 7 (sometimes more) days, about the forthcoming inspection (Art.83 of INFCIRC/153). Of course, for a normal operating facility this time is used to prepare everything that is necessary for the inspection (e.g., during PIV the operator should prepare all accounting and operating documentation, provide access to nuclear material, etc.). But at the same time, for a potential divertor, this period would permit the undertaking of additional measures to conceal undeclared activities. This argument is frequently used by critics of the current safeguards system.

The comprehensive safeguards agreements foresee that, "as a supplementary measure, the Agency may carry out without advance notification a portion of the routine inspections ... in accordance with the principle of random sampling" (Article 84 of INFCIRC/153). Paragraph 50 of INFCIRC/66 also makes a provision for the IAEA to carry out unannounced inspections : "whenever the Agency has the right of access to principal nuclear facilities at all times, it may perform inspections of which notice as required ... need not be given, in so far as this is necessary for the effective application of safeguards". However, having such an important addition to the inspection mechanism, the safeguards agreements do not fully provide other necessary conditions for its implementation by having only a general statement like : "In carrying out any unannounced inspections, the Agency shall make every effort to

minimize any practical difficulties for facility operators and the State ... Similarly the State shall make every effort to facilitate the task of the inspectors" (Article 84 of INFCIRC/153).

IMPLICATIONS OR REALITIES OF UNANNOUNCED INSPECTIONS

What does it mean to carry out an unannounced inspection? The inspector suddenly and unexpectedly shows up at the location to be inspected. The inspector should have a possibility of

- Free entry to the State (without visa or with multiple entry long-term visa),
- Free access to the facility (which sometimes requires time to meet strict physical protection rules)
- Free access to the location where the inspection is to be conducted.

For unnannounced inspections necessary facility personnel and, as required, SSAC representative(s) should be available. This last factor should be emphasized because the participation of SSAC representatives is one of the provisions of safeguards agreements.

Nevertheless, in spite of all the above mentioned problems, unannounced inspections are being implemented under the conditions of mutual advance agreement of all participating parties. The Agency has many such examples. Our experiences have given us insight as to How were the problems can be or were solved?

- With regard to ***access to the countries*** : many countries permit visaless access for inspectors on duties with UN passports; many countries, but not all, issue multiple-entry visas on an annual basis.
- With regard to ***access to the facility*** : it could be resolved by advance agreement on the list of designated inspectors who will visit the facility and provision of long-term entry ground passes for them.
- With regard to ***availability of facility's and State's representatives*** : a pragmatic solution could be agreement to provide access to the location to be inspected within not more than 2 hours after the arrival of the inspector at the facility gate. Such a "compromise" solution led to the introduction of a new safeguards term "short notice inspection" which was used in the title of this paper.

There is one more practical problem related to the planning and implementing of unannounced inspections. Existing administrative procedure for the preparation of routine announced inspections is not concerned, in a broad sense, with keeping secret the information

about the inspection under preparation. It does not mean that this information is easily accessible. The number of staff involved with practical preparatory activities (including travel agency, Divisions of Budget and Finance, and Technical Services, to site a few) is so high that the probability of unauthorised access to information should be taken into account. That is why as a part of preparation for broader use of unannounced inspections, the administrative procedure was subject to significant modification.

STRENGTHENED, COST EFFECTIVE SAFEGUARDS MEASURES

In the course of development of the strengthened and more cost-efficient safeguards system (Programme "93 + 2") a special attention has been paid to utilization of safeguards measures which fall under existing safeguards agreements but had not been much used (so-called Part 1 measures). Among others, unannounced inspections were considered. It was noted that their most effective implementation Would be in combination with other measures developed under the Programme "93 + 2". Unannounced inspections have a special importance for the reduction of safeguards cost. The fact is that the inspections being the most important component of safeguards measures, at the same time are the most expensive component. Therefore the replacement of some number of inspections by technical measures, such as remote monitoring, or by expanded reliance on SSAC inspections, would be one of the most essential ways for reduction of safeguards cost. In such a case, some number of less frequent, but more unpredictable inspections would be used to provide quality control of SSAC activities, or to perform activities which are difficult to make remotely, e.g., examination of containment integrity.

COMPLEMENTARY PHYSICAL ACCESS

Finally, it is worthwhile to note that in the complementary physical access included in the framework of the Additional Protocol to safeguards agreements is also used an unpredictability factor, in particular, during the performance of the complementary access to a building on a site, i.e., at a site containing facilities currently subject to IAEA safeguards. These are not inspections, but the unpredictability factor plays an important role here as in unannounced inspections.

One more provision of the Additional Protocol - important for the implementation of unannounced inspections - is Article 12. This Article obliges countries to issue multiple-entry visas for designated inspectors valid for one year with further extension as necessary for the purpose of carrying out the inspector's functions.

GOALS FOR UNANNOUNCED INSPECTIONS AT VARIOUS FACILITY TYPES

Now let us consider, taking as an example several facility types, what goals may be attained using unannounced inspections.

Power Reactors

1. From the Secretariat point of view one of the most promising ways for optimising safeguards at power reactors is application of remote monitoring. This will include transmissions of data of containment (seals) and surveillance (TV cameras) to Agency Headquarters as well as necessary operating data. The transmitted data are subject to regular examination. The safeguards approach will include one physical inventory inspection. Interim inspections for timeliness purposes (currently 3 inspections a year) will be "replaced" with more frequent examination of transmitted C/S data and a lower number of unannounced inspections (on average 1 inspection a year) for examination of containment integrity and examination on site of operating documents.

2. Using a so-called NPA-type safeguards regime which is currently being implemented in co-operation with the Euratom inspectorate, unannounced inspections also replace interim inspections for timeliness purposes.

Research Reactors

The most difficult diversion scenario for safeguarding of research reactors is the detection of unreported irradiation of target materials for production of plutonium or uranium-233. In this case, unannounced inspections permit

- Verification of the core loading structure (visually or using technical means),
- Examination of operating documents
- Confirmation of the absence of changes in facility design and its mode of operation.

Enrichment Facilities

At this facility type the Secretariat has implemented unannounced inspections for a long time. Safeguards approach for centrifuge enrichment facilities, developed in the mid-1980s, includes carrying out unannounced access inspections in cascade areas (so-called LFUA inspections - limited frequency unannounced inspections). These inspections are carried out in connection with routine inspections: access time to the cascade is no more than

2 hours. During the LFUA inspections safeguards measures to be implemented within the cascade area include:

- Personal or instrumental visual observation,
- Radiation monitoring and NDA measurements,
- Sampling and application and verification of seals.

Recently environmental swipe samples taking was added to that list.

LEU Fuel Fabrication Facilities

For safeguarding these facilities the most acute problem is the attainment of a complete verification of nuclear material flow. The nature of the nuclear material (low-enriched uranium) requires performing a limited number of inspections, while the operating regime includes rather frequent receipts of source material and shipments of ready fuel assemblies to customers. Currently the Safeguards Criteria require the verification of only 20 % of the total flow of nuclear material. That is not an effective solution; therefore, the criteria also include an option for the application of unannounced inspections randomly distributed in time, during the material balance period. This option would permit an increase in the coverage level to practically 100 % (although with small detection probability). To establish and implement such a verification regime is a rather difficult technical task, because it requires the operator to undertake some additional measures to provide access for the inspector to nuclear material before the source material enters into the process or before shipment of finished fuel assemblies. More rigid requirements are to be met by the system of accounting and operating records. The safeguards approach was successfully tested at two large fuel fabrication plants in USA and Sweden. At present the implementation of safeguards approach based on unannounced inspections has started at a fuel fabrication plant in Japan.

SUMMARY

Ever since its inception over 30 years ago, the IAEA safeguards system has evolved and have been strengthened by the regular introduction of new methods and techniques, improving both its effectiveness and efficiency. The Member States of the IAEA have indicated their willingness to accept new obligations and associated technical measure that greatly strengthen the nuclear safeguards system. One element of this is the extent to which the IAEA inspectors have physical access to relevant locations for the purpose of providing independent verification of the exclusively peaceful intent of a State's nuclear programme. The Protocol Additional to Safeguards granted new legal authority with respect to information on, and short-notice inspector access to, all buildings on a nuclear site and

administrative arrangements that improve the process of designating inspectors, issuance of multi-entry visas (necessary for unannounced inspections) and IAEA access to modern means of communication.

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In this short presentation, unannounced inspections or short-notice inspections were described as one of the measures on which the new, strengthened and cost-efficient system will be based.