ABACC'S EFFORT TOWARDS THE IMPROVEMENT OF JOINT ACTIVITIES WITH THE IAEA

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Abstract

In the past twelve years, Argentina and Brazil undertook several measures that resulted in full incorporation of the two countries into the non-proliferation regime. The main step towards this improvement was the signature of a Bilateral Agreement for the Exclusively Peaceful Use of Nuclear Energy. A joint nuclear material accounting and inspection system, administered by a safeguards organization - ABACC - was implemented. The role of ABACC is described and the main advantages of a regional system are emphasized.

The two countries, the ABACC and the IAEA later signed the Quadripartite Agreement, which determines the application of comprehensive safeguards in Argentina and Brazil. The Quadripartite Agreement called for a close coordination between the IAEA and ABACC that, while avoiding unnecessary duplication of efforts, shall allow each Agency to fulfill its responsibilities and to reach independent conclusions.

The increased co-operation with Regional Systems is a relevant tool to strengthen effectiveness and improve the efficiency of international safeguards. ABACC's efforts to improve joint activities with the IAEA are presented.

A key point is how the IAEA can make full use of the activities performed and results provided by ABACC. A basic step is to develop requirements and conditions that must be fulfilled to enable the IAEA to full use the findings of the regional system. Some ideas for the implementation of this basic step are discussed.

1. The role of ABACC as a regional system.

Argentina and Brazil signed the Bilateral Agreement for the Exclusively Peaceful Use of Nuclear Energy /1/ in July 1991. It is in force since December 1991. To verify the control commitment of the Agreement the Brazilian-Argentine Agency of Accounting and Control of Nuclear Materials (ABACC) was created. The objective of ABACC is to apply a full scope safeguard's system in both countries, called the Common System of Accounting and Control of Nuclear Material (SCCC) /2/. The purpose is to verify that all nuclear materials in all nuclear activities are not diverted to the manufacture of nuclear weapons or other nuclear explosive devices.

In December 1991, Argentina, Brazil, the IAEA and ABACC signed the Quadripartite Agreement /3/, which entered into force in March 1994. This Agreement determines the application of full scope safeguards in both countries (INFCIRC/153 type agreement) and takes into account the Bilateral Agreement and, therefore, the SCCC and ABACC. The Quadripartite Agreement called for a close coordination between the IAEA and ABACC that, while avoiding unnecessary duplication of efforts, shall allow each Agency to fulfill its responsibilities and to reach independent conclusions.

ABACC is applying its safeguard's system in a way to balance conveniently the safeguard's effort depending on the relevancy of the concerned nuclear activity. In principle, the regional system

may contribute in many ways to enhance the safeguards. A regional organization can strongly reduce the costs involved in safeguards implementation. ABACC, for instance, has a permanent technical staff of only 10 people that have a coordination function, and may use conveniently the technical and human resources of the countries. The mutual inspection model, as implemented by ABACC, allows the use of the best available expertise in both countries. This makes it possible to perform in each inspection the re-verification of the technical characteristic of installations and therefore to improve the safeguard's effectiveness. The regional organization controls a small universe of facilities and materials and is not constrained by requirements of universality of procedures, as required in multilateral systems. It is therefore in better condition to maximize the verification procedures on those stages in the nuclear fuel cycle involving the production, processing, use or storage of nuclear material from which nuclear weapons could readily be made. The safeguard's criteria and procedure can be applied to each specific facility, since the number of nuclear facilities is not too large, and allows to increase substantially the efficiency and effectiveness of safeguards.

2. The need of joint activities with the IAEA.

The Quadripartite Agreement states that the IAEA shall apply its safeguards in such a manner as to enable it to verify the findings of the SCCC. The IAEA verification shall include, *inter alia*, independent measurements and observations conducted by the Agency, in accordance with the procedures specified in the Agreement. The IAEA, in its verification, shall take due account of the technical effectiveness of the SCCC. Moreover, the agreement states that the States Parties, ABACC and the IAEA shall co-operate to facilitate the implementation of the safeguards provided for in the Agreement; and that ABACC and the IAEA shall avoid unnecessary duplication of safeguards activities.

The General Part of the Subsidiary Arrangements to the Quadripartite Agreement entered into force on the same date of the Agreement. Some particularities can also be found in this document, such as the provision for ABACC to send periodically to the Agency, information on the scope of its inspections, inspection reports, etc. There is an entire code dealing with arrangement between ABACC and the Agency for co-operation in the application of safeguards under the Agreement. While implementing these arrangements, both Agencies shall be guided by the following principles: a) the need to reach its own independent conclusions, b) the need to coordinate to the extent possible their activities for the optimum implementation of the Agreement and in particular to avoid unnecessary duplication of ABACC's safeguards. Also, when performing their activities, ABACC and the IAEA shall work jointly, whenever feasible, according to compatible safeguards criteria of the two Organizations. In principle, there is no basic incompatibility between the criteria followed by both Agencies. Differences that could arise in some specific cases should not constitute difficulties either to fulfill their responsibilities or to coordinate their activities avoiding the unnecessary duplication of safeguards efforts.

3. The Cooperation between the ABACC and the IAEA

Several levels of coordination between the ABACC and the IAEA are considered in the Quadripartite Agreement and its General Part of the Subsidiary Arrangements. A significant improvement in the cooperation was obtained with the approval of the document *Guidelines for Coordination of Routine and Ad hoc Inspection Activities between the Agency and ABACC* in 1997.

The guidelines described in this document provide guidance on the initial coordination of activities of the two agencies. They will be reviewed and amended, as appropriate, in the light of changing circumstances and developments.

Based on these Guidelines, nineteen sets of common procedures for the use of safeguards equipment have already been established. The task of reviewing and renewing previous agreed procedures is carried out continuously. Both agencies agree in advance the safeguards equipment acquisition planning.

Significant cooperation is expected to be achieved in the future, especially in areas like joint inspection activities and joint development of safeguards approaches. The optimization of the inspection effort is a continuous goal of ABACC. In this respect, ABACC is following two action lines: The first one is pursued together with the IAEA and the National Authorities to increase the safeguards effectiveness and efficiency, taking into account elements such as inspection frequency, number of inspectors, nuclear material involved and facility type.

The second action line is based on the implementation of the model of joint inspections with the IAEA. Its objective is to perform each safeguards activity only once during the inspection and its result shared by both agencies. For this purpose, the document "*Framework for Enhancing the Cooperation Between the IAEA and ABACC*" is under negotiation. This document describes the effort employed in seven areas of cooperation between ABACC and the IAEA and considers the activities that can be implemented in the near future. When approved, this document will be the reference for preparation of joint inspection for each specific facility. Joint inspection activities will be gradually implemented and it is expected in up to three years the model of joint inspections is implemented in all facilities of the two countries.

A main point for the implementation of joint inspections is the existence of a procedure for common book auditing. After discussion between officers from ABACC and the IAEA, the software currently used by ABACC for book auditing was properly modified to allow generating the information in the format required by the IAEA. At the moment, a test of the procedure is in course and is foreseen to begin the routine application of this procedure in the second half of 2002.

The progress achieved in the different levels of cooperation allowed the preparation and start up of discussions on the Guidelines for Joint Inspection Activities in nuclear power plants and fuel fabrication plants in Brazil and Argentina. It is expected that some Guidelines will be agreed up to the end of the current year.

Another subject of intensive cooperation between the two agencies is the development of safeguards approach for two small centrifuge plants in Brazil. This required close cooperation between technical groups from the two agencies. New NDA techniques were developed and qualified to be applied in both facilities. Besides this, the two agencies could agree on Arrangements for Unannounced Inspections and Swipe Sampling during Unannounced and announced inspections in those facilities.

The coordination of inspectors training is improving continuously. A detailed training program is exchanged yearly. Courses and Workshops are organized in important areas such as unannounced inspections in enrichment facilities with presence of instructors and inspectors from the two agencies.

Considering the future improvement of joint activities with the IAEA, ABACC is implementing the first phase of a quality assurance program. The areas included in this phase are the inspectors training, the equipment availability and performance of analytical laboratories.

4. The Improvement of Joint Activities with the IAEA

ABACC has already expressed its remarks and suggestions on the use of State and Regional Systems for international safeguards in several papers /4, 5/. Regarding the integration of a Regional System into the international safeguards system the following points should be emphasized:

- At the present moment, IAEA Safeguards Criteria does not foresee integration between the international safeguards scheme and regional or state systems.
- These Criteria were developed and are intended for a uniform application worldwide, while as results of the consideration given above some differentiation could appear among States as results of differences in the quality or credibility of the Regional System.
- The Criteria are being applied on a mechanistic basis and does not allow modifications aimed at covering particular fuel cycles in a more efficient way.

On the other hand, it seems that requirements that a State or Regional System must accomplish in order to be considered effective were never established. As a consequence, methodologies or structures to evaluate the effectiveness of a Regional System are unknown. Another consequence is that the Region does not have a reference to implement an effective safeguards system.

It is time for changes. It is essential to consider a more rational use of Regional Systems, especially after the entry into force of the Additional Protocol. Therefore, in order to allow the real use by the IAEA of Regional System's findings some basic documents shall be prepared and made available, in particular:

a) A scheme of the rules and criteria to be used for evaluating the objective elements of a Regional System. This will allow both the Regional System to consider improvements of its system for a better inclusion into the integrated scheme and the IAEA to consider appropriately the verification activities performed by the Regional System. In this framework, the Technical Meeting on Co-operation with SSAC's, held from 8 to 10 June at the IAEA Headquarters in Vienna, was an important step towards better cooperation between the IAEA and Regional and National Systems.
b) A summary description of the basic scheme of the quality assurance program to be used by the IAEA to confirm, on a continuous basis, that the Regional System maintains its initial level of credibility and effectiveness. And, to the extent necessary, the use that will be made of the measures foreseen in the Additional Protocol to this end. This will allow the Regional System to be prepared for an extensive integration. It should be noted that an increased integration would imply, inter alia, the sudden incorporation of an IAEA Inspector to an ongoing Regional System inspection at a given facility.
c) A complete description of the safeguards objectives that are intended to be covered by the IAEA Safeguards Criteria. Such a description would allow to consider alternative safeguards to cover these objectives and facilitate the proper introduction of new safeguards tools, either because of new techniques (e.g. remote monitoring, environmental sampling) or of the full use of Regional System resources.

5. References

[1] Agreement between the Republic of Argentina and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy, INFCIRC/395, IAEA, Vienna, November 1991.

[2] M. Marzo, A. Biaggio and A. Raffo, "Nuclear Co-operation in South America: The Brazilian-Argentine Common System of Safeguards", IAEA Bulletin, 3/1994, p.30-35, Vienna, 1994.

[3] Agreement between the Republic of Argentina, the Federative Republic of Brazil, The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials and the International Atomic Energy Agency for the Application of Safeguards, INFCIRC/435, IAEA, Vienna, March 1994.

[4] O. Peixoto, M. Marzo, and A. Biaggio, Considerations on the Role of RSAC and SSAC on Integrated Safeguards, 40th INMM Annual Meeting, Phoenix, Arizona, July 1999.

[5] M. Marzo, E. Palacios, A. Biaggio, Alternatives for Increasing the Cooperation with RSAC/SSAC, 41st INMM Annual Meeting, New Orleans, July 2000.