

## **COORDINATION IMPROVEMENT ON SAFEGUARDS APPLICATION BETWEEN ABACC AND IAEA**

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### **ABSTRACT**

The cooperation within the framework of the Quadripartite Agreement is an on going activity and the success of a regional and an international safeguards system working together relies on the good coordination between the parties. Taking into account the requirements for both efficient and effective safeguards, as well as the requirement for both Agencies (ABACC and IAEA) to minimize inspector resources and intrusiveness while applying safeguards and the need for each Agency to be able to reach its own independent conclusions, the coordination on safeguards application between ABACC and IAEA becomes complex and sometimes difficult.

This paper presents a description of the main co-ordination activities achieved between ABACC and the IAEA in the framework of the Quadripartite Agreement, INFCIRC/435, during the last four years. Introduction of new policies, new safeguards approaches and activities at sensitive installations, optimization of inspection effort, establishment of inspection procedures for non-routine activities, implementation and use of safeguards equipment on a joint use basis, coordination of equipment supply and maintenance, and implementation of new techniques in the field are considered. The paper presents an overview on the planning, implementation and analysis of results from the inspection activities and describes how joint inspection activities have contributed towards the safeguards system. Some views are also presented on further improvements and what is foreseen in the near future within the framework of integrated safeguards.

### **INTRODUCTION**

The Quadripartite Agreement states that ABACC and the IAEA shall apply nuclear safeguards in a cooperative manner and states that both agencies shall avoid unnecessary duplication of safeguards activities. In order to obtain the maximum of efficiency and effectiveness, using the minimum effort and assuring independent conclusions from each organization, coordination between ABACC and the IAEA while applying safeguards plays a major role.

In the last 4 years a significant effort has been made by both Agencies to improve Coordination. Many accomplishments have been reached in some areas, among which we can list:

- a- Documentation and communication framework area:
  - Guidelines for inspection coordination between ABACC and IAEA;
  - Procedures for secure communication between ABACC and IAEA;
  - Procedures for Nuclear Material Reporting from the States to the Agencies;
  - Procedures for Common Use of Equipment;
  - Procedures for specific inspections (sensitive installations).
  
- b- Concept and evaluation area:
  - Participation in special groups concerned with particular installations;
  - Development of safeguards approaches and procedures for specific sensitive installations;
  - Implementation of new policies;
  - Reclassification of installations by type;
  - Domestic transfer verification approach;
  - Facility Attachment negotiations.
  
- c- Operations area:
  - Planning of Inspections;
  - Optimization of PDI with emphasis on effectiveness and inspection resources;
  - The application of Joint Use of Equipment during inspections.
  
- d- Technical and operational support area:
  - Planning of equipment acquisition between the Agencies;
  - Comparison of DA analysis results;
  - Data analysis from NDA results applied to error calculation for equipment used at facilities;
  - Joint training of inspectors on joint use of equipment and procedures for inspections;
  - Joint training on specific inspection approaches (sensitive installations).

Most of the items listed above are “on going” as long as the Agencies apply safeguards based on the Quadripartite Agreement. New items that may contribute for improving the safeguards system are always considered to become active items in the coordination agenda.

## **RECENT IMPROVEMENTS**

Although a lot of improvement has been made, the application of safeguards in the framework of the Quadripartite Agreement still has room for further cooperation which will improve the efficiency and effectiveness. Recently, more specifically in the last three years, many issues were discussed to improve coordination. Some points are presented below.

## A - Introduction of new policies and new safeguards approaches.

In order to strengthen the safeguards systems, new or revised policies from the IAEA, and some from ABACC, have been developed and implemented. Even though the new measures fulfill the Legal framework of the Quadripartite Agreement, a measure may trigger a large impact on the Operator and State Parties.

ABACC and IAEA have conducted discussions on these new measures on an efficient and relatively fast mode. In some cases, discussions with the State Parties are necessary. As an example, we can mention the implementation of the routine Design Information Verification in all installations. This activity was conducted in a random basis in the past and in the last years became a yearly routine activity.

## B - Establishment of the Guidelines for Joint Inspection.

One of the main objectives behind the Joint Inspection concept is that all inspection activities are performed only once by a joint IAEA and ABACC team. This means that for every activity to be performed by inspectors from both organizations it should be executed together and the results should be shared. Note that the number of inspectors per agency in each activity will be dependent on the job complexity. Part of this concept has already been implemented, such as in the use of surveillance systems and some containment equipment in Common Use.

ABACC and the IAEA have been negotiating and preparing the framework for such implementation. Among that, the necessary steps and actions are the following:

- The **development and agreement** of well defined **Procedures for Inspection** activities. For all relevant installations to be inspected a detailed procedure for each type of inspection and activity is established in advance in order to permit that the activities to be performed in the field be executed only once and fulfill the ABACC and IAEA requirements. These procedures will constitute a set of documents called **Guidelines for Joint Inspection**.
- **A full implementation of an Agreement for Common Use of Equipment**, which means to have almost all equipment in the field being shared by both Agencies and to have the inspectorates personnel trained. In addition, the procedures for calibration and service for such equipment shall be agreed;
- **A Common Accountancy Inspection Procedure** that allows both agencies to perform the same activity in the field and transfer data to their own different databases. This system for accountancy auditing has been implemented between IAEA and ABACC and a common database is created before each inspection to be loaded in a Common Audit Software. The outcome results are saved in a format that allows both organizations to load the results on their own systems ;

Again, all actions are taken with the aim of introducing savings where possible without loosing the ability for each organization to reach its own conclusion on the results of the inspections.

### **C - Optimization of inspection effort in all activities.**

The main objective is to perform each inspection activity, fulfilling the criteria of both agencies with a minimum effort. To achieve such goals the following actions are taken:

- Both agencies agree on the number of inspectors per organization in each inspection (PDI) and necessary frequency of inspections. Both are defined on the basis of the analysis of the facilities or LOFs, considering the type of process in the installation, the inventory of nuclear material, and the complexity and number of activities to be performed in each inspection,
- Coordination of inspections schedule taking into consideration the agreed PDI, which allows the split of a mission team during the mission;
- Coordination on unannounced inspections considering points such as triggering of the inspection and communication procedures. This will permit that both agencies may take part in almost all UI inspections avoiding an excessive inspection effort, even fulfilling the criteria of both organizations.

All actions are taken without loosing the ability of each organization to reach its own conclusion on the results of the inspections. However improvements on the saving of inspection effort can still be made.

### **C - Establishment of the equipment supplying and maintenance.**

This is one of the coordination improvements between ABACC and the IAEA already in force since the beginning. However, the large number of tasks involved and complexity of the technical coordination require permanent discussions and updated procedures.

Usually, during the coordination meetings both organizations agree on a long term framework -- with the span of around four years --, on which equipment will be necessary to be supplied, based on the commissioning of new installations, necessary replacements and new technology instruments that may replace old ones with better performance. After that, the organizations agree on which equipment each agency is going to supply.

Following the action list, the organization in charge makes a more detailed schedule for each equipment to manage its procurement, acquisition, installation and test. In the test phase both organizations have the right to participate and the Joint Use Procedure is discussed and implemented.

With regard to maintenance, the organization in charge of the acquisition is also responsible for the maintenance in order to keep total control on the equipment performance.

Even though sharing the costs of equipment evenly is not a fixed rule, the balance in the cost decision is followed between the two organizations.

### **D - Implementation of new technology techniques**

As long as new equipment and services applying new technologies are available for safeguards application, the IAEA and ABACC make all the effort to use these new devices. In this field we can highlight the following improvements:

- The application of digital technology in safeguards equipment replacing analogic systems, mainly in surveillance, containment and non-destructive verification systems. This new equipment usually speeds up field activities and allows an easy exchange of data and analysis of results. The back office storage duty is also highly facilitated.
- **The implementation as much as possible of electronic media** on interchange of data dealing with information, communication and conclusions which flow between Agencies and in some cases communication with the States Parties. This requires the setting up of systems and procedures among the all parties;
- During the last four years the use of Swipe Sampling Technique has increased. This powerful technique has strengthened the safeguards applied to sensitive installations, like enrichment and reprocessing, and also allows that the safeguards approach and effort be optimized. Nevertheless, the result analysis and understanding requires from IAEA and ABACC a special coordination –where, when and how to get samples - and customized field procedures.

## NEAR FUTURE IMPROVEMENTS TO BE DEALT WITH

As previously mentioned, improvements in coordination shall be a permanent goal to be pursued by both organizations. Nevertheless, we may state some comments on what we expect to be the main effort in the near future.

**First** - As described in the item **Joint Inspection Framework**, full implementation continues to be the more immediate and more rewarding to accomplish. As soon as all the points to implement this framework are agreed and put into force, the following benefits may be envisaged:

- safeguards will be applied much more efficiently considering that that the activities will not be duplicated;
- technical confidence between the inspectors from both organizations will increase. This will, of course, provide space for more optimization, acting as a feed-back correction of any inefficiency.

**Second** - **SNRI** – Short Notice Random Inspections is in an implementation phase. Even though it is being introduced at Fuel Fabrication Plants and Conversion Plants, its application is foreseen on other types of installations, such power reactors and enrichment facilities.

The coordination on these types of inspections can be impacted due to many factors, such as when the inspection is to be triggered, who is going to trigger and which activities should be done at each inspection.

**Third** - The effective application of **DIV** activities. IAEA and ABACC recognize that an effective DIV will improve the safeguards. Both organizations are working together to have an effective DIV procedure to be applied in field. Some specific installations will

have specific procedures and the activities to be executed should be within the framework of the Quadripartite Agreement.

**Fourth** - The approval and qualification to use new technology systems, such as remote monitoring and verification systems with data transmission. These applications usually require coordination between the agencies, on which data and system will be shared, and also the agreement and special requirements from the State in which it is applied.

Finally, in case of the Additional Protocol coming into force, some challenging points arise which require further definition such as:

- the exact role of ABACC on the Additional Protocol. This matter is currently under review, specifically between Brazil, Argentina and ABACC.
- the flow of information among the parties;
- the new activity that each party has to perform, being in the office or in the field, alone or together;
- the way safeguards results are to be presented;
- new common procedures for the IAEA and ABACC

Coordination on the application of the Additional Protocol will be a major undertaking, with many new issues on implementation and operational functioning to be addressed, which will surely have influence in the traditional or current coordination measures that both organizations have set up in the last years. Nevertheless, the advance in the relationship that the organizations have today not only facilitates the overcoming of these undertakings but also offers many tools to conduct negotiations and settings of the protocol.

Finally, the preparation of ABACC safeguards system to have some assessment by the IAEA auditing should also be considered as a near future task to improve coordination.

## CONCLUSIONS

Coordination between ABACC and the IAEA is an integral part of the Quadripartite Agreement. Since the beginning of safeguards implementation under this agreement, both organizations have put a lot of effort to implement this.

In the last three years, significant advance was made in the coordination between the organizations. The data obtained from safeguards application shows that the safeguards are being applied in a more efficient way and manner, keeping high standards of efficiency.

Furthermore, coordination improvement has allowed that both increase the knowledge among their safeguards systems. This helps to build confidence between the IAEA and ABACC, by promoting a regenerative feedback that makes coordination and safeguards application more effective.

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