

# EXPERIENCE IN BUILDING A COMMON SAFEGUARDS SYSTEM

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**ABSTRACT:** *Several papers describe the history of the creation of the Common System of Accounting and Control of Nuclear Material (SCCC) and the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) as well as the continuous development since 1992. This paper focused on practical and historical aspects of the first years of ABACC, describing the main areas where efforts were made for a successful implementation of the binational safeguards system. Finally, in the conclusion, the authors summarized what are in their opinion the main aspects to be considered when creating a safeguards system, hoping that this information would help others that face a similar challenge.*

## Introduction

Several papers describe the history of the creation of the SCCC and ABACC as well as its continuous development since 1992 (references 1,2,3,4). This paper will focus on practical aspects of the creation and operation of the SCCC and ABACC, hoping that such experience will be useful for others that attempt to create a safeguards organization.

## The Beginning

Contacts at political and technical levels started well before the signature of the Bilateral Agreement (ref. 5), and in the second half of the eighties it was taken the political decision of promoting the mutual transparency in the nuclear area. Since that time, political agreements paved the way for allowing technical meetings and starting the discussions of how it should be a common safeguards system. In fact, the first draft of the Common System of Accounting and Control of Nuclear Material (SCCC) was written in November 1990. In addition, reciprocal visits and a few inspections took place before December 12 1991, when the Bilateral Agreement entered into force.

It seems interesting to note that both countries have facilities and materials safeguarded under INFCIRC/66 agreements and have their respective national systems, which at that time differs in several aspects. Based on the political decision of having a full scope safeguards' system, the technicians developed the SCCC as a set of general conditions and homogenous rules to be applied in both countries.

Since its first draft, the SCCC embraces, inter alia, requirements and conditions to be fulfilled by facility operators and national authorities as well as rules for mutual inspections. Later, when it was formally decided to sign the Bilateral Agreement, it was incorporated the role of ABACC as administrator of the SCCC and coordinator of the binational safeguards activities.

The Bilateral Agreement formalizes the basic commitment of the countries on the peaceful use of nuclear energy and provides the legal basis for the application of the SCCC. The Agreement also establishes the principles of the common control system and creates ABACC for administrating the SCCC (Details of the Agreement, the organization of ABACC, and the structure and content of

the SCCC can be found in references 5 and 6). It should be emphasized that the Agreement establishes rights and responsibilities that turn the mutual control a serious political commitment of the two countries.

### **Practical Aspects of the Negotiation of the Bilateral Agreement**

As technicians, it was interesting to find out not only some mutual differences regarding the proper approach for making a workable common system, but also to learn about the different approaches followed by the diplomatic and the technical personnel involved in the negotiations.

For the Foreign Affairs personnel of both countries the concern was how to draft in a proper way the political commitments to be assumed and to delineate the elements of the control system. At the same time, the technicians were concerned with the technicalities of the SCCC and, in particular, with the basic elements for implementing any control system: personnel, equipment and operational budget, noting that such resources would be necessary at facility, national authorities and ABACC levels.

Now, years later, it is clear that each part was doing the best in its respective framework. However, we must confess that as no detailed discussion on practical implementation matters took place during the negotiations at diplomatic level, some anguish involved us at that time. In the diplomatic vision once a political commitment is made the necessary resources would be provided. For us it means that we shall do our best and trust that such assumption will be transformed in reality.

### **Practical Aspects of the Implementation of ABACC's Secretariat and the SCCC**

The implementation of ABACC was a challenge, in particular because ABACC would be the first full operational binational organization to be created between Argentina and Brazil. Previous binational activities were usually limited to special committees or boards that meet periodically for addressing particular problems.

The implementation of the SCCC was also a challenge that not only depended of a successful implementation of ABACC but of the combined effort of ABACC's Secretariat, the national authorities and the facility operators of both countries. Although all activities were carried out simultaneously the subject are addressed separately in this paper. Again, it should be noted that the Bilateral Agreement provided the boundary conditions for the application of the SCCC and for implementing ABACC through the consideration of the several levels (facility, State and Bilateral levels) and its cooperation.

#### **Implementation of ABACC's Secretariat**

As it will be indicated below, the implementation problems were gradually resolved because of a great collaboration of the National Atomic Organizations and the continuous support of the Foreign Affairs Organizations of both countries. It was not easy, hard discussions took place several times but the good will prevailed.

**Budget, Funds and Premises.** The preliminary budget for 1992 was defined by the end of 1991. In spite of the fact that the Agreement was approved by both governments after the closing of the fiscal year, the funds for 1992 were provided without a significant delay, reflecting the firm

commitment of both countries. By June 1992 not only the funds were available but also the conditions for its use were agreed upon, facilitating the full installation of ABACC's Secretariat. The continuous funding support from the two countries was a basic condition for the successful implementation of the SCCC.

As established by the bilateral agreement, the premises of ABACC would be located at Rio de Janeiro City. The Brazilian government provided a list of federal buildings available in the city and after visiting several of them the present premises were selected. Later it was necessary to get additional space on the same building for allocating some activities, in particular technical support activities that increased significantly along the years. In addition to that, several inspection teams may be at same time in ABACC Headquarters and this requires enough room for an appropriate work.

**The people.** In general, the first technical personnel assigned to ABACC Secretary were selected by each National Atomic Organization and proposed to ABACC Commission after agreement with their respective Foreign Affair representative. Some of them come directly from the national safeguards area but most come from other areas although all have a very good background in the nuclear area, nuclear activities, nuclear instrumentation or nuclear control activities.

As indicated in a previous paper (ref. 1), ABACC's Secretariat is constituted by a few technical people (2 in Accounting of Nuclear Material, 2 in Operation, 2 in Technical Support and 2 in Planning and Evaluation). The Secretariat is the core of ABACC and safeguards activities are supported by inspectors, consultants, laboratories, and study groups that usually works for national nuclear organizations or state companies.

It is interesting to note that the average age of the technical personnel nominated at that time was about 45 years. All of them were physic or engineering graduates and several with a master or a Ph.D.

**The Initial Organization and the First Inspections.** Brazilian personnel started to work in the premises by March 1992 using borrowed furniture, telephone lines and computers (mostly provided by the Brazilian National Authority). During June and early July, the already designed Argentinean personnel move to Rio de Janeiro and it can be said that in July 1992 ABACC's Secretariat was formally constituted. As the Secretariat is the core of the system, since the beginning was organized as to allow a continuous increment in the use of computers to increase its efficiency. The first important acquisition was, therefore, a full set of personal computers not only for the technicians but also for the auxiliary personnel.

One of the first activities was to create the accounting database for incorporating the initial declarations (see below) and their modifications (inventory changes). The first database was a simple one but it was continually improved as well as was the coordination with the national authorities and the transmission and processing of data. (Note: At present all accounting data is received and transmitted electronically. In addition, inspectors are using a software in the field for auditing accounting data and the results of their activities are later automatically incorporated into the database.)

The first inspections took place in September 1992 and where aimed at verifying the design of facilities (in our system the verification of the design is considered an inspection). The first NDA

equipment was received by the end of 1992 and early 1993 and the first inspections for verification of nuclear material took place in March 1993. Equipment acquisition is a constant activity and at present in addition to portable equipment, several facility specific equipment (e.g. surveillance) are of ABACC's property. An operational data base was also created that at present is being fully reformulated. (Note: Currently, most of the equipment is under common use between ABACC and the IAEA.)

**Training.** Since the beginning, training was an area of main concern. The first training course for ABACC inspector took place by the end of 1992 and inspectors' training increased continuously. Below are described other needs of training for a successful safeguards implementation of the SCCC.

### **Implementation of the SCCC**

**Role of the National Authorities.** A singular characteristic of the SCCC system is the dual role of the National Authorities. The national organizations, in addition to fulfill its obligations at national level, must provide, at ABACC request, inspectors, services and support for special studies. The inspectors, support and services are the contribution of one state for performing the controlling activities in the other state.

**Initial Declaration and Design Information.** It can be said that both countries have had a hard 1992. Once in force the Agreement there was a dead line of six months for providing the initial declaration (list of facilities and inventories of nuclear materials) and to start to provide design information questionnaires of each facility. This work was done by each National Authority with their respective national operators. It should be stressed that it was not always ease to put order in the inventory of old storage, some laboratories and a few old R&D facilities. The reception of design information questionnaires allows ABACC to start the DIV inspection indicated above and to test the system for convoking inspectors and performing cross inspections. (Note: The experience of the first years moves the Secretariat to open an office in Buenos Aires to facilitate the inspections activities in both countries.)

**Record and Reports, Operators' Training.** In addition, at the beginning, a big effort was made by the National Authorities (with ABACC's support) for training the operators in the proper recording and reporting of nuclear inventories and inventory changes. The recording and reporting system established by the SCCC is basically the Code 10 of the IAEA, that differs from the former systems used at national levels and also differs from the INFCIRC/66 system. The training of the Operators was an essential element, and courses, consultant support and practical advice were intensively carried out in both countries.

Although both countries have a big surface, nuclear activities are concentrated in geographical "clusters" that usually involve activities of a similar nature (e.g., fuel production, nuclear power stations, R&D activities or R&D facilities). Therefore, the operator's training was carried out by cluster, taken advantage of the fact that each cluster involves facilities that usually presented the same kind of difficulties.

**Data recording and reporting at national level.** In the SCCC system, the operators send the data to the National Authorities that make an internal control and retransmit these data to ABACC. This was another area where both national authorities and operators work hard, in close

coordination with ABACC, for improving the system regarding data quality, data processing and data transmission.

## The Problem of Interfaces

Any safeguards system is plenty of interfaces and each interface represent a potential problem. Since the beginning of ABACC, interfaces were clearly identified and the usual tools for dealing with this organizational problem were used: meetings, exchange of personnel and frequent communications either formal or informal. The inspectors made available to the bilateral system worked for several organizations, and were national safeguards inspectors, facility operators, design specialist and so on. The fact that they performed inspection activities in the other country facilitated they understanding of safeguards problems and safeguards needs. This characteristic of the bilateral system fulfills in practice the same kind of solution to the interface problems that the exchange of personnel.

Meetings were regularly scheduled and its frequency was significantly high during the first years. Usual meetings involved ABACC and one or both national authorities and addressed a revision of past actions and a discussion about the future steps. This was a method for identifying in advance potential problems and eventual solutions. Daily communications were, and remain, a usual practice in ABACC, and in the last years the use of e-mail has increased exponentially.

ABACC's Secretariat used to have regular and frequent internal meetings, either of a general nature or to discuss a particular subject (e.g. the replacement of a given equipment or the tentative agenda of a future meeting). In addition, several groups of consultants were organized and meet regularly providing recommendations to ABACC on subjects like, destructive analysis, non destructive analysis, technical cooperation (in particular with both countries) and safeguards of sensitive facilities. Finally, it is a usual practice to request the advice of experts of the countries for studying a particular safeguards problem or for developing a special safeguards technique.

(Note: As results of the entry into force of the Quadripartite Agreement (March 1994) additional interfaces problems appeared that were addressed in the same way.)

## Conclusions

Conclusions arising from this description of history and activities can be summarized as follows:

- i Make every effort to reach and continuously increase the technical competence of all people involved (facility operators, inspectors, staff members, consultants, laboratories that provide support, etceteras). Regular training's courses would be essential for operators and inspectors.
- ii Pay special attention to the interface problems, be open mind when addressing them, and use all available tools for smoothing the development of the safeguards activities.
- iii Develop safeguards approaches for each facility using a sound basis and technical judgement. While it would be necessary to have criteria compatible with the ones used by IAEA, it

would convenient to deal with each case separately. At national or regional level it is not necessary to use “universal criteria” by type of facility.

- iv Take your time for selecting the appropriated safeguards equipment. The procurement of the right equipment facilitates the life of operators, inspectors and, consequently, of the safeguards organization.
- v Establish realistic goals for each year and do the best to fulfill them.

Finally, as always, it should be taking into account that safeguards did not differ from other activities of life and that good willing is not enough. The implementation of a proper safeguard' system requires a lot work, common sense and enough funding.

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