

## EXPERIENCE IN BUILDING A COMMON SAFEGUARDS SYSTEM

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**Chairman:** Our next speaker is Alfredo Biaggio. He has an engineering degree from the University of Buenos Aires. Before joining ABACC, he was the Scientific Secretary of the Nuclear Regulatory Board of Argentina. He has been a senior officer for Planning and Evaluation at ABACC since the organization's creation in 1992. Welcome, Mr. Biaggio. His talk is titled "Experience in Building a Common Safeguards System."

**Alfredo Biaggio:** Thank you very much. I would like to present some of my personal experiences on this subject. The co-author of this paper is Dr. Marco Marzo, my partner at ABACC. My talk will focus on the practical aspects of the creation and operation of the Common System of Accounting and Control of Nuclear Material (SCCC) and ABACC.

We should start at the beginning with an understanding of the political and technical context at that time. In the late 1980s, a political decision was made to promote mutual transparency in the nuclear area. Afterwards, political understandings paved the way for starting technical meetings and discussions about a common safeguards system. It is interesting to note that the first draft of the SCCC was written before the signature of the Bilateral Agreement. It was completed in November 1990 and the Bilateral Agreement entered into force in December 1991.

Based on the political decision to have a full-scope safeguards system, the SCCC covered all nuclear materials and nuclear activities in Argentina and Brazil. It included rules and requirements that were to be followed by operators and national authorities of both countries as well as a system of inspections. A few inspections even took place before the entry into force of the Bilateral Agreement. There were also several visits by politicians and technicians. Such inspections were carried out under the previous version of the SCCC that did not consider ABACC's existence.

The Bilateral Agreement was a decision taken for several reasons. It established the basis of the common control system, and created ABACC as the "administrator" of the SCCC. It also provided a forum for coordinating activities. Both countries also wanted to clearly indicate and formalize the commitment they assumed regarding the peaceful use of nuclear energy. This agreement established the rights and obligations expected of both countries and turned mutual nuclear control into a serious political commitment.

During the negotiation of the Bilateral Agreement, the politicians focused on commitments—how to appropriately draft the political commitments and delineate the elements of the control system? The technicians were more concerned with the practical aspects of implementation—how to build an effective, neutral control system with personnel, equipment, and an operational budget.

I must confess that during the negotiation of the Bilateral Agreement, there was no practical discussion about personnel, budget, or equipment. The diplomatic people assumed that once the commit-

ment was made, the technical aspects would be fulfilled. The technicians were doubtful that the necessary resources would be provided. But quite to our surprise, the money, personnel, and equipment appeared. We started to implement the system, and after ten years we can say that it works very well.

The implementation of ABACC was a challenge, in particular, because ABACC was the first fully operational, bi-national organization to be created between Brazil and Argentina. I can say now, as Mr. Feu indicated before, that this is the only permanent organization that exists in South America. By “permanent organization,” I mean an organization that has headquarters, staff, personnel, and a regular budget. There are some permanent bi-national committees that exist, and they meet several times per week, per month, or per year. But ABACC is the only such organization with a headquarters.

To be successful in the implementation of the SCCC, we needed cooperation. We needed true cooperation from the nuclear authorities of both countries and the operators. The final condition we needed was continuous, full support from the government, including the foreign affairs representatives and the national nuclear organizations.

The preliminary budget for 1992 was defined by the end of 1991, after the fiscal year of both countries ended. In spite of that, both countries contributed funds for the creation of the ABACC Secretariat. This was clear evidence of political support. As established by the agreement, the headquarters would be located in Rio de Janeiro city, and the present premises were selected among a list of federal buildings that the Brazilian government offered. By March 1992, the premises were physically available.

How were personnel selected? The first technical personnel assigned to ABACC were selected by each national atomic organization and proposed to the ABACC Commission after agreement with their respective foreign affairs representative. The decision was made by each country and was based on internal information from the nuclear organization and on experience. They were accepted, without exception, by November 1992. There was only one case where one candidate that was selected was denied for internal reasons.

The countries selected senior professionals for ABACC. The average age was 45 and the candidate had to have more than ten years’ experience in the nuclear area. There were not many young people involved then, so now the average age of ABACC personnel is much older. We intend to slowly replace personnel in order to recruit younger people.

The ABACC Secretariat is the core of the control system. There are only eight technicians. Safeguards activities are mainly carried out by the inspectors and experts provided by the nuclear organizations or companies of both countries.

In March 1992, Brazilian personnel began working at the premises using borrowed materials, mostly provided by the Brazilian national authority. Argentinean personnel moved to Rio de Janeiro in June and the Secretariat officially started to work in July 1992. Funds were readily available, as well as the conditions for its use. The first important acquisition was a full set of personal computers for the technicians and auxiliary personnel.

The first equipment for inspection was acquired by late 1992. The first inspections took place in September 1992 and were aimed at verifying the design of the facilities. In December 1992

the first course for ABACC's inspectors took place and the first inspection aimed at verifying nuclear material started in March 1993.

Once we had computers, the next task was to create an accounting database for incorporating the initial declarations and their modifications. The first database was a simple one, but it was continually improved, as was the coordination with the national authorities and the transmission and processing of data. At present, all accounting data is received and transmitted electronically.

There was a political decision at that time regarding inspections. It was decided that we should start with those facilities that were not under IAEA safeguards. That included all sensitive facilities, including one military facility. The commitment made by both countries was that inspections applied to all nuclear materials and all nuclear activities. No distinction was made in the Bilateral Agreement regarding facilities inside military areas. For all practical purposes, however, there were no facilities in military areas.

The Quadripartite Agreement entered into force in March 1994. During 1993 and the first part of 1994, we concentrated our activities in the sensitive facilities. As I said before, the inspections for the verification of nuclear material started in March 1993 and were focused on those facilities that were not then safeguarded by the IAEA.

The original accounting database was expanded and improved. A software system was designed to organize an inspection's system for auditing records and reports, and accounting inspection data was added to the database. All accounting data is at present received and transmitted electronically between both countries and between ABACC and the IAEA. An operational database is currently being upgraded and will be fully operational by the end of 2001. When we started, most of the facility-specific equipment belonged to the IAEA and was used jointly. In addition, we are gradually installing facility specific equipment also under joint use with the IAEA.

The training of inspectors continues to be the highest priority of ABACC, in order to increase its technical competence. This includes ABACC's support for the training of the operators of the facilities—a responsibility of each national authority.

There is one thing that makes ABACC completely different from EURATOM. EURATOM started in a way where there were no national authorities. Even now, most of the countries do not have a national authority in the nuclear area. Our system requires the existence of a national authority. In addition to fulfilling its national obligations, the authority is the natural channel used by ABACC for requesting inspectors, consultants, studies, and services. These services are additional contributions from one state to ABACC for controlling the other state. At the same time, the national authority has the obligation to assure that all operators fulfill their commitments.

The year 1992 was a hard one for both countries, their national authorities, and their operators. During the first semester they provided a detailed list of facilities and nuclear inventories, and they started to provide design information questionnaires (DIQs).

Training the operators was a key element, and ABACC cooperated a great deal. The operators' training in the SCCC system of recording and reporting was carried out by each national

authority with ABACC's cooperation. The training of operators was organized by geographical clusters, since it was common to have similar facilities and problems at each cluster. To put it in perspective, in 1992 there were approximately 70 facilities, and some of them reported under the INFCIRC/66 regime. The others reported according to each national authority's requirements. In other words, all operators should be retrained on the proper SCCC system of recording and reporting.

It is interesting to know our experience regarding interfaces. Any safeguards system involves plenty of interfaces and each interface represents a potential problem. ABACC's system is unique because we have more interfaces than most. The conception of the SCCC with the dual role of the national authorities increases the number of interfaces.

The entry into force of the Quadripartite Agreement in 1994 increased significantly the number of interfaces and, in my judgment, we did a lot of work to avoid problems. From the beginning, we identified and dealt with the interfaces in order to implement the system smoothly. When dealing with interfaces, you need three essential tools: exchange of personnel, meetings, and frequent communications.

Exchange of personnel was indirectly covered by the fact that Argentinean inspectors carried out inspections in Brazil reciprocally. Remember that in his/her respective country, ABACC inspectors can be the national inspectors, operators, or designers. In some ways, this crossed system of inspections avoids some of the problems caused by interfaces.

Meetings with the national authorities were regularly scheduled during the first couple of years, but in 1993 – 1994 the frequency of those meetings slowed. These meetings involved ABACC and one or both national authorities and were intended to review past activities and to anticipate future activities.

The intention was good, but there were often complaints because the inspector was not there for training or because the inspection day was changed on short notice. These regular meetings are quite important in order to keep the system running smoothly. One must also be open-minded. Daily communications were, and remain, an essential element for avoiding interface problems. At present, we use e-mail and its usage is increasing exponentially.

In order to smooth the implementation of safeguards, ABACC organized several advisory groups. These groups include various experts from both countries and give analysis and advice on matters requested by the Secretariat. It is quite useful because the group consists of various experts in different areas and they provide us with unbiased proposals on how to carry out certain activities.

The Quadripartite Agreement created new interfaces, but we deal with them in the same way. We have maybe a hundred or more meetings per year. It is incredible. The Secretary takes care of the budget administration and the general management of ABACC Secretariat. Some meetings are coordinated by the Secretariat. The other meetings are the responsibility of the respective concerned area of ABACC (Accounting, Technical Support, Operations and Planning and Evaluation). It is very hard to reduce the number of meetings until we have agreed upon safeguards approaches and safeguards activities. It is going well, but we are not finished yet.

Goodwill between parties is not enough in order to implement a safeguards system. Technical competence is a key requirement in order to have a credible system. ABACC pays special

attention to maintain technical competency at all levels, including operators, inspectors, staff members, consultants, laboratories, and others. We also pay special attention to interfacing problems. It is important to understand the problem of the other party or the operator. This is a key element to finding a common solution that is good for all parties.

We also decided not to use safeguards criteria that is the standard for each type of facility. We deal with each facility on a case-by-case basis. It is not easy for an international system to have this kind of facility-specific criteria, but for a regional safeguards system, it is not necessary to have universal goals. We use the standard safeguards criteria when it is convenient. We even created something new in particular cases. At the same time, because of the Quadripartite Agreement, we must always work in a compatible way with the IAEA safeguards criteria.

Another suggestion is to take your time in selecting the appropriate safeguards equipment. The procurement of the right equipment eases the life of operators, inspectors, and the safeguards organization.

Finally, each year ABACC and the Secretariat establish goals for the year. The goals should be realistic and every effort should be made to fulfill them. Thank you very much for your attention and good luck.

**Participant:** Do you have a Secretariat in Buenos Aires too?

**Alfredo Biaggio:** The headquarters of ABACC is in Rio de Janeiro. After about one year, we explained to the ABACC Commission that we needed another office in Buenos Aires. Now, there is an operational office there.

**Participant:** I ask these questions because I am thinking about applying this to the Korean setting. How do you apply your bilateral system into a Korean setting? This is very important. Koreans are very sensitive about this kind of problem—the venue. If the headquarters are in Seoul, and there is no office or only a small office in Pyongyang, North Korea will resent it.

The Quadripartite Agreement involves Brazil, Argentina, the IAEA, and ABACC. My question is: How do you ensure the neutrality of ABACC? ABACC is composed of people from both Argentina and Brazil. The Brazilians would be loyal to Brazil and the Argentineans would be loyal to their own country. How can you ensure the neutrality of this organization, enough to become a part of the treaty?

**Alfredo Biaggio:** A key element is that Argentinean inspectors carry out inspections in Brazil and vice versa, these inspectors travel back and forth between Argentina and Brazil regularly to carry out inspections. Inside ABACC, we don't make any distinction between Argentinean or Brazilian facilities. For years I have been dealing with Argentinean facilities and for years I have been dealing with Brazilian facilities. From a practical point of view, ABACC is a real international organization.

**Participant:** The ABACC Secretariat has only eight permanent staff, but there is administrative support. These eight people are paid by ABACC, so they are more-or-less like international employees. In addition, they use part-time based inspectors from Argentina. Thirty nuclear professional experts from the national labs have been pre-designated to ABACC as inspectors. When

inspections come, they simply call these inspectors, and when they inspect the Brazilian facilities they use Argentineans and vice versa. They only pay their travel expenses. Neutrality is maintained as a result of cross inspections.

The question you raised is the neutrality of the permanent staff—the eight staff people under Mr. Feu and Mr. Biaggio. These people tend to become neutral rather than biased to Argentina or biased to Brazil. Does that seem right?

**Participant:** I think that the same may not be possible on the Korean peninsula. We may have to choose people from a third country.

**Participant:** First, the choice of Rio de Janeiro was considered to be more useful because people that come from Vienna can stop in Rio de Janeiro and then can go to Buenos Aires. We were thinking about the Vienna relationship from the beginning. The choice of Rio de Janeiro was agreed to by Argentina with no problems. I think it's better to have only one headquarters so more personal exchanges can take place. We discuss matters all the time at ABACC. We have four sectors, as Biaggio presented in his paper: an operational sector, account and control, planning, and technical support. There are other specific areas that we chair or support. We also have some administrators and technicians.

We have two Secretaries, and the positions alternate each year. One is Deputy Secretary one year, and Secretary the next. That is one way to have neutrality. At the beginning, Argentina was dealing with Brazilian installations and now we are not so biased. There are many sectors that analyze the inspections—the operational one and the planning. We always have a mix, but perhaps in the future we won't need this distinction.

**Alfredo Biaggio:** At the beginning there were difficulties because we had to learn to be members of a bilateral organization. It takes some time to realize that you are no longer Argentinean or Brazilian, but part of ABACC. I believe it is important to decide issues on a technical basis.

**Participant:** What language do you use at headquarters?

**Alfredo Biaggio:** We use both Portuguese and Spanish. It is easy to understand because the languages are so similar. We also use English for external purposes or sometimes to prepare internal documents.

In the beginning we came across some problems. In some cases, the same word had different meanings, which is dangerous. I remember a long discussion with Marco Marzo one day that ended when I asked him, "For you, what is the meaning of these words?" and he explained the meaning and I said "Well, that is not the meaning for me." It was a lengthy discussion. This only happened during the first months until we became more familiar with the language.

The key element is the technical approach. Doing something strictly for political reasons and without technical merit is useless. There can be no confidence or neutrality this way. "Neutral" means that you try to follow technical rules. You must do your best to deal with problems on a technical basis.

**Participant:** How do you respond to the Part I measures that the Agency uses at hot cells and enrichment plants? How do you deal with swipe samples? What are your thoughts on the Model Protocol?

**Alfredo Biaggio:** ABACC incorporated part of the swipe-sample approach at two facilities. We do not have the capacity in the countries to do particle analysis, so we are using it very sparingly.

**Participant:** What about the Model Protocol? Are Brazil and Argentina going to sign and ratify the Protocol?

**Alfredo Biaggio:** This is a political matter. Mr. Feu is in a better position to answer this.

**Participant:** We discussed the basic documents with the Agency and with the countries. We have an agreement about the words. Before we implement the Model Protocol, we will take some time. I think that the special installation that we have in Brazil must find a way to apply the new protocol in these facilities. We don't know when we will start the application of safeguards, but we are ready to sign it.

**Participant:** Would you change your procedures?

**Participant:** That is a good question. Our position is the same as EURATOM. How ABACC will deal with this new approach to safeguards is another question. In the new approach we are concerned about undeclared activities. The Bilateral Agreement is more explicit about nonproliferation than even the NPT. Our agreement is clear as a nonproliferation agreement. Another important point is that to apply safeguards you must know the nuclear program.

ABACC must have the right to ask questions. In the present situation it is not very clear what the new role of the regional organization in this system would be. I think that we have the same problem that EURATOM is dealing with now. We are doing our job to clarify with the countries.

**Participant:** Can you ask questions now of the operators?

**Participant:** No, you cannot ask questions about the application of these facilities if we had some questions about a new installation, for instance. Sometimes we know that things are happening in the country, but from the formal point of view, we cannot ask questions. It is one of the new problems we have in the regional system.

**Alfredo Biaggio:** What is important is that the Agency has not defined it yet if the regional systems, or even the state systems, will play a role in integrated safeguards. It is something that the Agency has just started to study.

**Participant:** Since our main interest is the applicability of the ABACC model to the Korean peninsula case, let me offer these comments for us to think about.

ABACC was created and has now been in operation for nine years. Suppose both South and North Korea agreed to have a bilateral inspection at the second or third summit. We would have to form an organization, recruit inspectors, and establish a headquarters. In order to operate something like this, we'll need funding and a budget. In ABACC's case, they shared a \$3 million annual budget.

In the Korean case, if we need \$1 million, North Korea would probably say that it is unable to pay. This means South Korea or perhaps the United States would have to absorb the whole cost.

A second problem is that we say we want to inspect a facility in North Korea. North Korea might refuse, saying it is military-related. In ABACC's case, both sides agreed to inspect all the facilities in both countries, either military or civilian. They started off with all the inspected facilities, no arguments. In our case, ten years ago, we submitted a list of places we wanted to visit and inspect, and they submitted to us a list of places to visit, which included U.S. army bases. Neither side could agree. How could we solve that issue?

In your case, ABACC is more-or-less a permanent, international, bilateral organization, and Argentina and Brazil are permanent, separate states. In our case, we cannot see this inspection regime as a permanent entity, because someday North and South Korea will be reunited. Then it will no longer be needed, right? The baseline of a bilateral inspection organization in Korea is more-or-less on a temporary basis rather than permanent, even if we do agree.

**Participant:** To add to that dilemma, what if North Korea doesn't want to see our facilities? In the case of Brazil and Argentina, each country equally wanted to see the other's facilities. But North Korea knows that South Korea has no nuclear bombs. South Korea is very transparent, so the motivation is not equal. That is also another part of the problem.

**Participant:** I'm not quite sure about what the previous participant said. I think, from a technological point of view, the North Koreans would want to know many things about South Korean facilities.

**Participant:** In the early 1990s, when we negotiated mutual inspections, North Korea said, "We don't need to see South Korean military bases. All we want to see are U.S. bases."

**Participant:** But now it is different because of the KEDO light-water reactor project. They need to know how light-water reactors in South Korea are being inspected.

We should now move on to the paper by Mr. Yo Song.