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2001

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ABACC

ABACC

Contents:

Brazilian-Argentine Agency for Accounting and
Control of Nuclear Materials

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1. Introduction

In 2001, the Agreement on the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement) between the Federative Republic of Brazil and the Republic of Argentina -- that also established ABACC -- celebrated its tenth anniversary. In 2002, ABACC will be completing ten years in operation and of the implementation of its headquarters. Nuclear safeguards have undergone a conceptual review at the international level, designed to strengthen this system. It is quite natural that the Regional Agencies linked to this system should adapt to these changes. With functions similar to those of ABACC, EURATOM is currently restructuring its organization.

In terms of the Draft Additional Protocol to the Quadripartite Agreement, discussions took place on the role of ABACC during this implementation. The main decisions on this role were taken by both countries and notified to ABACC through the members of its Commission. Under the new vision adopted by the model of the Additional Protocol of the IAEA, ABACC will handle matters related to nuclear materials. It is expected that, within the vision of integrated safeguards, the IAEA may make better use of the safeguards at the regional level as applied by ABACC. The preliminary wording of the Protocol leaves room for the countries to assign additional tasks to ABACC in future. The ABACC Secretariat is making good use of these circumstances to encourage reflection on the Common System for Accounting and Control of Nuclear Materials (SCCC) and its future.

The activities of the Secretariat during 2001 focused on fulfilling its mission under the safeguards system established by the Agreements in effect. At the start of the period, certain priorities were indicated for its activities. Outstanding among the most relevant aspects of these priorities are the complete implementation of a safeguards approach for enrichment plants in Brazil; the progress achieved in coordination with the IAEA for the effective joint application of safeguards; closer coordination with the National Authorities; and progress on technical matters underpinned by the support of the national entities and international cooperation on matters related to safeguards.

The technical topics rated as top priority by the Secretariat include de development of a monitoring system for the movement of fuel elements at the Atucha Nuclear Center in Argentina, and the implementation of the initial stage of formalizing the quality guarantee processes. At this initial stage, the areas covered include inspector training, availability of equipment, and the performance of the laboratories in the Network that supports ABACC.

Outstanding among the administrative topics rated as top priority are the steps taken with the Brazilian authorities to renew the lease of the premises where ABACC is headquartered, and finishing the computerized inventory of the physical assets of ABACC, which is nearing completion.

High priority was also assigned to fine-tuning information processing mechanisms in order to ensure the confidentiality of the data handled within ABACC. The electrical facilities and in-house communication systems of ABACC are being reviewed, and an exclusive in-house communications network will allow integrated inspection information to be handled more securely.

Another priority was met through the development of software that is more user-friendly - currently being installed - for the preparation, records and analysis of the inspections carried out by ABACC. This new System processes both technical and administrative information, building up stronger links among the technical areas, particularly Operations and other sectors of the ABACC Secretariat that need to consult inspection information.

On staff-related topics, the in-house regulations were modified in order to allow the implementation of a system renewing the ABACC staff, ensuring the smooth functioning of the Secretariat.

As part of its efforts to enhance the visibility of the efforts of ABACC in Brazil and Argentina, a Symposium was held to celebrate the First Ten Years of the Bilateral Agreement that established ABACC, at the headquarters of the Argentine Chancellery in Buenos Aires, attended by Ministers of State and nuclear authorities of both those countries.

In the analysis on compliance with the priority ratings, the Secretariat feels that the main targets have been met, as outlined here. Some activities fell behind schedule (inventory, quality programs, separate computer network, formalization of the office lease and fund-raising), which were reaching conclusion by the end of the period. However, the main targets were achieved for all activities rated as high priority.

The results of the nuclear material verification activities undertaken by the Secretariat from January through December 2001 did not indicate any non-compliance by Argentina or Brazil with their basic commitments expressed through the Bilateral and Quadripartite Agreements, as well as in the Treaties of Tlatelolco and Nuclear Non-Proliferation (NPT).

Carlos Feu Alvim
Secretary, ABACC
December 12, 2000 - December 11, 2001

2. Overview of the first ten years of ABACC

Organization of ABACC

1992

The activities of ABACC and its Secretariat essentially began in 1992.

The early months were devoted to bringing in the human and material resources required to start up its operations, as well as approving its in-house regulations.

In June, the Brazilian government assigned ABACC the premises that still house its headquarters today.

The first technical steps taken by ABACC included the approval of the List of Inspectors by the Commission (the directive body of ABACC), in parallel to making a start on the acquisition of inspection equipment and organizing the analysis laboratory network.

In September, the Secretariat (the executive body of ABACC) received the initial inventory of existing nuclear materials from the Brazilian and Argentine National Authorities, as stipulated in the General Procedures of the Common System for Accounting & Control of Nuclear Materials (SCCC), in addition to the technical questionnaires for all their facilities.

In October, ABACC began its initial Design Information verification to these facilities. By the end of the year, it posted an inspection effort of 28 inspector-days in the field, with 114 inspector-days available to the Secretariat.

By the end of the first year, ABACC was already organized and operative. These results were achieved through the steady, effective cooperation of the National Authorities.

L. Argentine Chancellor, Guido di Tella (in memoriam), and then Minister of Foreign Relations of Brazil, Fernando Henrique Cardoso, inaugurating the ABACC offices in Rio de Janeiro.

Implementation of the Common System for Accounting and Control (SCCC)

In the course of this year, work basically focused on fine-tuning and organizing the Secretariat, launching the application of safeguards in order to verify the initial declaration of the nuclear materials inventory completed by both countries.

A methodology was established for preparing the accounting reports that was compliant with Code 10 of the model for the General Part of the Subsidiary Arrangements of the IAEA. A start was made on drafting the Application Manuals (documents that are, in the SCCC, equivalent to the Facility Attachments of the IAEA) for most of the verified facilities, while completing the purchases of equipment needed to carry out the inspections.

1993

As both Brazil and Argentina already had facilities subject to the INFCIRC / 66 type safeguards of the IAEA, the ABACC Secretariat assigned top priority to the design verification and initial inventory activities of the facilities that were still not subject to safeguards at that time.

Together, the design verification visits and the initial inventory verification inspections reached 106 inspector-days in the field, with 373 inspector-days available to the Secretariat.

The achievements of the administration in 1993 may be summed up as follows: by the end of the year, all facilities in Brazil and Argentina were under the safeguards of either ABACC or the IAEA, and the SCCC was implemented.

ABACC inspectors verifying the initial inventory of nuclear materials.

The Quadripartite Agreement comes into force

1994

In early 1994, ABACC established the objective of its activities as being the design and initial inventory verifications of the facilities that were already under IAEA safeguards, as well as carrying out the corresponding interim inspections.

In March this year, the Quadripartite Agreement entered into effect. Consequently, 1994 may be viewed as the first year of activities coordinated with the IAEA and the implementation of this Agreement. These activities also involved coordination with the National Authorities.

The Quadripartite Agreement establishes three different levels of coordination:

- The Liaison Committee, consisting of representatives of the four Parties to the agreement, whose main responsibility is reviewing the implementation of the coordination agreement established under the Additional Protocol, including the examination of the inspection efforts undertaken and the development of safeguards techniques and methods.
- High-level bilateral planning coordination intended to resolve problems that may arise during the implementation of the agreement and avoid unnecessary duplication of efforts.
- Coordination at the bilateral and trilateral operations level, focused on the planning and implementation of the inspection activities.

ABACC and IAEA inspectors, together with representatives of the Brazilian National Authority during a pre-inspection meeting.

In 1994, and subsequent years, the implementation of the agreement required countless coordination meeting at the three levels described above.

Within the deadlines stipulated in the Subsidiary Arrangements, ABACC forwarded the initial inventory declaration to the IAEA for both countries, in addition to the Design Information Questionnaires (DIQ). From June onwards, all the inspections verifying these documents were coordinated. These activities required an inspection effort from ABACC consisting of 562 inspector-days in the field and 1,506 inspector-days available to the Secretariat.

In the course of this year, ABACC also forwarded to the IAEA accounting reports for the corresponding alterations in the inventory and 23 of the 25 first draft Facility Attachments, which were prepared under its responsibility, as stipulated in the General Part of the Subsidiary Arrangements.

With regard to the organization of the Secretariat, after a detailed analysis of the safeguards criteria of the IAEA and of EURATOM guidelines, the basic safeguards criteria was drawn up for ABACC in 1994. The specific criteria for each type of facility will be prepared on a case-by-case basis, grounded on the safeguards approaches to be implemented at each facility.

Furthermore, in order to check the quality of the analyses of the samples from the various laboratories in the ABACC analysis network, an intercomparison program was run with positive results, involving twelve of the fifteen invited laboratories.

Summing up the activities undertaken in 1994: by the end of the year, ABACC had brought all nuclear materials involved in all nuclear activities undertaken in Brazil and Argentina under its control, and a start had been made on implementing the Quadripartite Agreement.

April 1994, ABACC and the US Department of Energy sign a Technical Cooperation Agreement and launch cooperation on research, development, testing, and evaluation of technology, equipment, and procedures in order to improve nuclear material control, accountancy, verification, and advanced containment and surveillance technologies for international safeguards applications.

Coordinating Activities with the IAEA

The main drive in 1995 focused on coordinating the activities of ABACC and the IAEA, in order to move ahead and fine-tune the implementation of the Quadripartite Agreement. Many meetings were required at all three levels of coordination for this purpose.

This coordination was not easy and these two organizations had to do their utmost, backed by much good will, to solve a wide variety of problems that ranged from field inspection discrepancies through to difficult discussions on criteria interpretation.

Nevertheless, these problems were gradually solved. Verifications of the designs of the few remaining facilities were completed and the inspections were coordinated efficiently, with ABACC posting an inspection effort of 683 inspector-days in the field with 1,489 inspector-days available to the Secretariat.

The approval of the Facility Attachments - the main activity needed to complete the implementation of the Quadripartite Agreement - also began this year, with bilateral and trilateral discussions on the draft documents for eleven facilities.

1995

In parallel, considerable progress was achieved in the wording of the ad-hoc procedures for inspections of sensitive facilities.

Particularly noteworthy in 1995 was the drafting of the first rough version of the document entitled "Guidelines for the Coordination of Routine and Ad-Hoc Inspections", designed to avoid unnecessary duplication of activities while complying with the principle that ABACC and the IAEA should reach independent conclusions.

ABACC and the IAEA at a coordination meeting

As a result, the 1995 activities lead to the conclusion that the Quadripartite Agreement was implemented in practice, except for the Facility Attachments.

Inspectors of both agencies work together

Strengthening safeguards

1996

ABACC and IAEA inspectors test an Ion Fork Detector at Angra 1 Power Plant.

The activities undertaken by ABACC during the course of this year were devoted to fine-tuning the coordination with the IAEA and monitoring the initial efforts of this Agency to implement Part I of its Program for Strengthening Safeguards (93 + 2 Program).

With regard to fine-tuning the coordination between ABACC and the IAEA, notable progress was achieved through the approval and entry into effect of the document entitled: Guidelines for Coordination of Routine and Ad-Hoc Inspections, which laid down the grounds for avoiding unnecessary duplication of efforts. These guidelines are already being applied by the inspectors in the field, but are currently limited to ways of sharing instruments and equipment, and do not yet include the issue of "human resources".

Particularly outstanding within this context is the fact that the Common System for Accounting and Control of Nuclear Materials (SCCC) had been designed for the application of conventional safeguards, meaning controlling nuclear materials and the facilities declared by the countries. Consequently, in parallel to the implementation of the SCCC by ABACC, the IAEA prepared a program to strengthen the efficacy and enhance the efficiency of its own safeguards system, through which it intended to ensure the absence of undeclared nuclear material and facilities, with the necessary level of credibility, launching the application of Part I of this Program during 1996.

In turn, the ABACC Secretariat received a specific directive from the Commission to accompany the efforts of the IAEA to implement this Program. The Secretariat participated in the visits undertaken by the IAEA in order to verify the consistency of the initial inventory, as well as the discussions and initial measurements designed to implement the first part of the Program.

Although its role in this Program warrants further consideration, in 1966 ABACC began data transmission and remote surveillance activities, in addition to fostering the development of particle analysis capacities in Brazil and Argentina.

Inspectors identifying and measuring with NDA techniques Atucha (Argentine) fuel elements.

Additionally, ABACC attended the meetings as an observer, held in Vienna for the preparation of the Model Additional Protocol to the Agreements between the States and the IAEA for the Application of Safeguards (INFCIRC / 540), covering the implementation of Part II of the Program for Strengthening the IAEA Safeguards.

The ABACC inspection efforts in 1996 reached 623 inspector-days in the field, with 1,415 inspector-days available to the Secretariat.

Thanks to the management activities during 1996, the coordination between ABACC and the IAEA for the application of the Quadripartite Agreement functioned in a satisfactory manner, with ABACC starting to prepare for the participation it may have in the implementation of the IAEA's Program for Strengthening Safeguards.

Presidents Carlos Menem and Fernando Henrique Cardoso unveil the plaque commemorating the 5th Anniversary of ABACC.

1997

The first five years

By 1997, ABACC had been in operation for five years. This event was celebrated by several acts, outstanding among which was the signature of the Joint Declaration by the Presidents of Brazil and Argentina on November 10 of that year.

Outstanding among its achievements in 1997 are improvements in the coordination mechanisms between the IAEA and ABACC, reflected in the implementation of the Guidelines for Coordination of Routine and Ad-Hoc Inspections; discussions of the safeguards approaches for enrichment plants in Brazil and Argentina; and progress in talks and approvals of some Facility Attachments covering facilities in Brazil and Argentina.

In the course of this year, ABACC posted an inspection effort of 479 inspector-days in the field, with 1,096 inspector-days available to the Secretariat.

Carlos Menem and Fernando Henrique Cardoso sign the joint declaration in celebration of the first five years of ABACC.

From left: Amb. Jorge Hugo Herrera Vegas, Dr. Jorge Gill and Amb. Ronaldo Sardenberg at the opening session of the seminar that celebrated the 5th year anniversary of ABACC.

Effective safeguards approach

With much effort and the cooperation of all those involved, innovative solutions were sought for the application of effective safeguards at sensitive facilities, preserving technological secrets.

This year ABACC held the first unannounced inspection at an isotope enrichment plant, under the aegis of the Bilateral Agreement.

Progress was also made with the implementation of the Quadripartite Agreement through the entry into effect of five Facility Attachments for Brazilian facilities and three for Argentine facilities, while ten equipment-sharing procedures were discussed and approved. In the technical cooperation area, ABACC signed an agreement with the IAEA and continued working closely with the Argentine Nuclear Regulatory Authority (ARN), the Brazilian National Nuclear Energy Commission (CNEN) and the US Department of Energy (DOE).

During the year, ABACC completed an inspection effort of 424 inspector-days in the field, with 899 inspector-days available to the Secretariat.

Elbio Palacios and Mohamed ElBaradei sign the Technical Cooperation Agreement between the ABACC and the IAEA.

1998

Training course on unannounced inspections carried out under the cooperation between ABACC and the US Department of Energy.

Workshop on uranium enrichment measurement techniques at Portsmouth Laboratory, USA.

Korean experts exchange experiences with ABACC officers under the cooperation arrangement between the ABACC and the Technology Center for Nuclear Control (TCNC).

Cooperation

1999

"Cooperation" is the key word summing up the activities of ABACC during 1999. Forging ahead with closer integration of inspection activities involving the IAEA, various procedures were implemented for the common use of equipment.

Additionally, a Cooperation Agreement was signed with the European Community, with the intervention from the Energy General Directory and the Joint Research Center (JRC), formalizing a lengthy history of technical cooperation with EURATOM. International cooperation with the US Department of Energy (DOE) continued during the year, in addition to working closely with other countries particularly France and the Republic of Korea.

Staff training remained top priority, bringing out the full technical potential of both countries and the entities or countries with which ABACC is linked through technical cooperation projects, organizing specific courses and on-the-job training.

Invited as a guest, ABACC continued to attend the most important global safeguards technical fora, maintaining its presence as a speaker, presenting technical papers at safeguards congresses and in discussions on regional safeguards systems, targeting not only regions where there is no compliance with the NTP, as well as regions where the implementation of a similar system is under study. Additionally, ABACC continued its relationship with the Organization for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL - Organismo para la Proscripción de Armas Nucleares en la América Latina y el Caribe), meeting the demands of the countries through the formal declarations needed to comply with the requirements of the Treaty of Tlatelolco.

The inspection effort of ABACC in the course of this year reached 499 inspector-days in the field, with 857 inspector-days available to the Secretariat.

ABACC has always given top priority to staff training.

Towards maturity

Moving ahead with the coordination of its activities with the IAEA, in parallel to implementing the common use of equipment, talks began on specific procedures for joint inspection activities covering two specific facilities. The discussions over the Facility Attachments between the IAEA, the Brazilian and Argentine National Authorities and ABACC progressed appreciably in the course of the year, with fifteen new Facility Attachments coming into effect.

Antonio Oliveira and Elias Palacios at the opening session of the seminar on the Additional Protocol, organized by ABACC in Buenos Aires, Argentina.

2000

ABACC inspectors measuring UO_2 drums with NaI detector....

.... and determining the profile of a silo at the Embalse Nuclear Power Plant.

Under the aegis of the Bilateral Agreement, ABACC continued to receive crucial support from Argentina and Brazil for studies and development of many different safeguards aspects. The regular exchange of experiences and cooperation with EURATOM in areas of common interest, as well as the ongoing cooperation program with the US Department of Energy are also noteworthy activities in the field of international cooperation. Within this context, it is also important to stress the start-up of the Technical Cooperation Arrangement with the Korean Atomic Energy Research Institute (KAERI) in the Republic of Korea.

ABACC organized two seminars in order to explain the scope, commitments and other implications of the Additional Protocol, with specialists from the IAEA, EURATOM, Japan, Australia, the USA, Argentina and Brazil as speakers. These two events fostered broad-ranging discussions that included members of the Diplomatic Corps, professionals from the nuclear authorities and facility operators.

Dr. Marco Marzo, ABACC Planning & Evaluation Officer, gives a lecture on Regional Systems and Integrated Safeguards during the seminar on the Additional Protocol.

In September this year, Brazil, Argentina and ABACC delivered a new draft text to the IAEA for the Additional Protocol to the Quadripartite Agreement, prepared by these three parties, thus proceeding with the contacts with the IAEA on the Model Text for the Additional Protocol.

In the course of 2000, the inspection effort of ABACC reached 369 inspector-days in the field, with 711 inspector-days available to the Secretariat.

Elías Palacios, current Secretary of ABACC, Jorge Cal, first Secretary, and now retired, and Carlos Feu Alvim, Deputy Secretary.

10 Years of the Bilateral Agreement

Faithful to its mission of applying safeguards to all nuclear materials declared by Brazil and Argentina, in compliance with the 1991 Agreement on the Exclusively Peaceful Use of Nuclear Energy, for the past ten years ABACC has been investing in the technical training of its inspectors. A key factor has been the unwavering support of Brazilian and Argentine technical experts and laboratories through the Nuclear Regulatory Authority (ARN) and the National Atomic Energy Commission (CNEA), both in Argentina, and the Brazilian National Nuclear Energy Commission (CNEN). Furthermore, technical cooperation with international entities, particularly the International Atomic Energy Agency (IAEA) and the European Atomic Energy Community (EURATOM), and with several other countries, including the USA, France, the Republic of Korea, Japan and the United Kingdom, has been extremely important.

2001

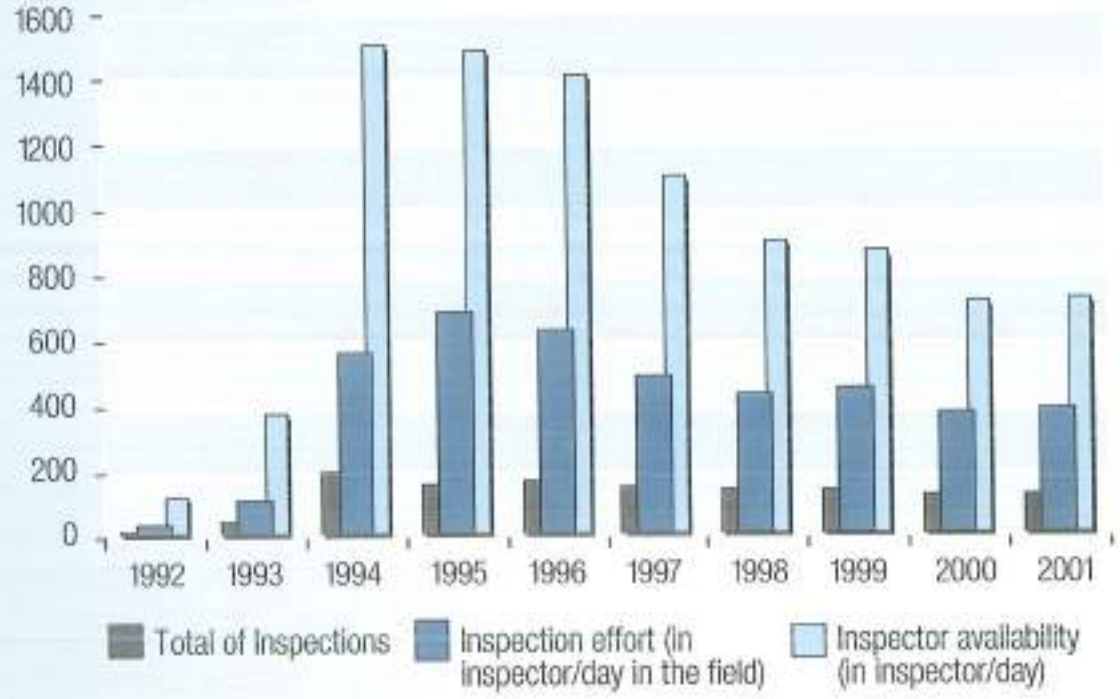
From left: Carlos Feu Alvim, Celso Lafer, Brazilian Minister of Foreign Affairs, Adalberto Giavarini, Argentine Minister of Foreign Affairs and Ronaldo Sardenberg, Minister of Science and Technology of Brazil at the opening session of the seminar that celebrated the 10th Anniversary of ABACC, in Buenos Aires.

With regard to its relationship with the USA, the technical cooperation program with the Department of Energy allowed ABACC to acquire latest-generation equipment, while also welcoming US technical experts to the courses and workshops held to train ABACC inspectors.

Today, ABACC is endowed with a highly reliable nuclear accounting system and a group of well-qualified inspectors, in addition to an inspection program that is being implemented steadily, a solid technical support structure, that is constantly fine-tuned, based on the laboratory and human resources made available by the two countries, in addition to a planning and evaluation system that has proven highly effective in assessing the nuclear activities of Brazil and Argentina.

Moreover, ABACC continues to devote special attention to the issue of integrated safeguards, and is strongly supporting the efforts of the IAEA in this field. With this same purpose, the views of ABACC on this topic and the probable role of regional schemes in the integrated safeguards system have been presented at leading international events.

Evolution of Inspection Effort



ABACC has done its utmost to enhance its efficiency during inspections, with procedures being established for the common use of equipment during inspection activities carried out with the International Atomic Energy Agency (IAEA); it has trained its inspectors for this purpose, using the most advanced measurement and surveillance techniques whenever possible. Additionally, ABACC and the IAEA have coordinated their activities in a manner that ensures more effective use of the inspectors in the field, without adversely affecting the scheduled tasks.

After a period of discussions with the IAEA to define the facilities classified as Locations Outside Facilities, inspection efforts were reduced in accordance with the stipulations in the Common System for Accounting and Control (SCCC) and the IAEA criteria, in order to cover one-third of these facilities a year. It was also agreed to send one inspector from each agency to these Locations and at other non-complex facilities. The results are shown in the graph above.

Transfers of spent fuel to the dry storage silos at the Embalse Nuclear Power Plant in Argentina warranted special attention. This facility absorbed 47% of the ABACC inspection efforts - almost the same amount of effort assigned to all other facilities in Argentina and Brazil. In order to rationalize the inspection efforts required, various studies and procedures were undertaken, finally reaching an agreement with the IAEA, the Argentine National Authority and the Operator on the presence in the field of only one inspector per agency instead of two, as had been the previous practice, preserving the principle of independent conclusions being reached by both agencies.

These facts are shown in the graph "Inspection Efforts", giving the ratios for inspetor.day in the field / days travelling, and preparation of inspections and reports. It can also be noticed that other implementation activities of the Bilateral Agreement (Guadalajara) and Quadripartite Agreement, which prompted important initial efforts were concluded by 1995. The number of ad-hoc or routine inspections at major facilities continued largely unchanged, with in fact a certain increase being planned for the near future, in view of the start-up of operations of new facilities.

3 . Activities of the Commission

The ABACC Commission met in March, when it approved the Annual Report and the economic and financial balance sheets for the 2000. At the second meeting held in August, the directive body of ABACC approved the 2002 work plan and the corresponding budget, analyzed the economic and financial balance sheet for the first four months of 2001 and guided the conduct of the ABACC Secretariat on other matters of a technical and political nature. At the third regular meeting of the year held in December, the Commission approved the economic and financial balance sheet for the second quarter of the year, and also renewed the work contracts for the four technical officers and the most senior Argentine employee at the ABACC Secretariat. On the same occasion the Commission officially transferred the position of Secretary of ABACC to Engineer Elías Palacios, with Dr. Carlos Feu Alvim da Silva taking over the functions of the Deputy Secretary.

Members of the Commission of ABACC meet at the Argentine Nuclear Regulatory Authority headquarters in Buenos Aires.

Elías Palacios next to Amb. Antonio Guerreiro and Amb. Attilio Meloni, both Members of ABACC Commission, at the seminar that celebrated the first 10 years of ABACC.

4. Activities of the Secretariat

4.1 - Institutional Activities

In August, ABACC organized a Seminar to celebrate the 10th Anniversary of the Agreement on the Exclusively Peaceful Use of Nuclear Energy, signed by the Federative Republic of Brazil and the Republic of Argentina on July 18, 1991 at Guadalajara, Mexico. This Seminar celebrating the tenth anniversary of the establishment of ABACC was run in cooperation with the Argentine Ministry of Foreign Affairs, International Trade and Religion on August 14 at the San Martin Palace in Buenos Aires, attended by the Chancellors of Argentina and Brazil, Adalberto Giavarini and Celso Lafer, as well as the Brazilian Minister of Science and Technology, Ronaldo Sardenberg. At the opening ceremony of this Seminar, the three authorities stressed that ABACC had built up considerable experience in fulfilling its mission right from the time it was first established, while acknowledging the high technical and operating levels achieved by this Agency. The Seminar Program included lectures on the role of ABACC as the regional nuclear safeguards entity, the integrated safeguards under the aegis of the of the Additional Protocol, cooperation between Brazil and Argentina in the nuclear area, the potential importance of the newly-established Argentine Brazilian Agency for Nuclear Energy Applications (ABAEN - Agência Argentino-Brasileira de Aplicações da Energia Nuclear) paving the way for future cooperation between these two countries, and the challenge of nuclear exports: the Argentine experience. These presentations were given by the following authorities in the nuclear field of these two countries: Aldo Ferrer, Chairman of the Comisión Nacional de Energía Atómica; José Mauro Esteves dos Santos, Chairman of the Comissão Nacional de Energia Nuclear; Hector Otheguy, General Manager of Investigación Aplicada - INVAP S.E.; Antonio Oliveira, Chairman of the Autoridad Regulatoria Nuclear; and Carlos Feu Alvim, the ABACC Secretary.

From left: Elías Palacios (ABACC), Aldo Ferrer (CNEA), José Mauro E. dos Santos (CNEN), Hector Otheguy (INVAP), Antonio Oliveira (ARN) and Carlos Feu Alvim (ABACC).

Building up links with third party countries, the ABACC Secretariat attended a workshop on Nuclear Confidence Building in the Korean Peninsula, held in Muju, Republic of Korea in July sponsored by the Technology Center for Nuclear Control (TCNC) and the Centre for the Unification of Data and Resources (CUDR), of which the Korean Institute for National Unification (KINU) is a member. Representatives of ABACC, the Institute for Science and International Security (ISIS), KINU and the Korean Defense Institute (KIDA) also took part as speakers. On this occasion, the ABACC Secretariat gave a presentation on the "Possible application of the ABACC Model in other Regions", and the Planning and Evaluation Officer Alfredo Biaggio, spoke on the "Experience of ABACC in Establishing a Common Safeguards System".

Other events at which ABACC was represented include:

- An ABACC Technical Officer (Marco Marzo), participated as an instructor in the 13th International Training Course on the Implementation of State Systems of Accounting for and Control of Nuclear Materials (SSAC), held in Santa Fe, USA, in May.

- The ABACC Secretary (Carlos Feu Alvim) and two technical officers (Alfredo Biaggio and Rubén Nicolás) attended the annual meeting of the European Safeguards Research and Development Association (ESARDA), held in Belgium in May.

  Papers presented: "Impact of Some Conceptual Aspects of Containment and Surveillance on Modern Safeguards" and "The ABACC System for Accounting Nuclear Materials".
- The ABACC Deputy Secretary (Elías Palacios) and three technical officers (Olga Matra Guidicini, Rubén Nicolás and Alfredo Biaggio) attended the Annual Meeting of the Institute for Nuclear Materials Management (INMM), held in Indian Wells, California, USA, in July.
  Papers presented: "Integrated Safeguards: A Pragmatic Balance", "ABACC Procedures for Records Auditing" and "Evaluation of Low-Level Environmental Sampling capabilities at Brazilian and Argentine Laboratories by ABACC".
- The Secretary (Carlos Feu Alvim) and an Operations Officer (Orpet Peixoto) attended the 45th General Conference of the IAEA as observers, held in September.
- The Deputy Secretary (Elías Palacios) and the Operations Officer (Orpet Peixoto) attended the Symposium on International Safeguards: Verification and Safety of Nuclear Materials, held in Vienna in October. On that occasion the following papers were presented: "The Experience of ABACC After Ten Years Applying Safeguards"; by: Elías Palacios / José M. Esteves dos Santos / Antonio Oliveira / Carlos A. Feu Alvim; "Coordination Improvement for Safeguards Application Between ABACC and IAEA", by: Orpet J.M. Peixoto / Horacio Lee Gonzales / Elías Palacios / Jean Yves Lefebvre ; "Alternatives to Reach Safeguards Goals at Atucha I Nuclear Power Plant", by Elías Palacios / Orpet Peixoto / Marco Marzo / Hugo Vicens / L. Valentino.

4.2 - Technical Activities

The result of the nuclear material verification activities undertaken by the Secretariat from January through December 2001 did not indicate any non-compliance by Argentina and Brazil with their basic commitments expressed through the Bilateral and Quadripartite Agreements, and in the Treaties of Tlatelolco and the Non-Nuclear Proliferation (NPT).

The following technical priorities were established for 2001:

1. The completion of negotiations on the safeguards approach for the Isotopic Enrichment Laboratory in Brazil and its implementation with the International Atomic Energy Agency (IAEA);
2. The completion of negotiations with the Brazilian National Authority on the safeguards approach for the Uranium Enrichment Pilot Plant (USIDE) and start the unannounced inspection system at this facility;
3. The development of a bundle counting system at the Atucha I Nuclear Power Plant in Argentina;
4. The assessment of the activities of ABACC from the following standpoint:
   - permanent training for inspectors and staff;
   - quality assurance mechanisms for the Laboratory Network;
   - efficiency of Technical Cooperation activities.

The Secretariat also undertook specific actions designed to:

- implement a more user-friendly system for overseeing and recording the inspections activities;
- upgrade the availability and reliability of inspection equipment;
- fine-tune the inspection coordination with the National Authorities ;
- review and fine-tune information protection mechanisms; and
- implement a computerized physical inventory system.

Planning and Evaluation

In order to meet the priority targets of ABACC regarding the safeguards at enrichment facilities, several meetings were held under the aegis of the Bilateral Agreement (ABACC/Brazil), and in the framework of the Quadripartite Agreement (ABACC/IAEA/Brazil) accomplishing considerable progress in this field. Outstanding among the main achievements are:

The eighth meeting of the Liaison Committee - the higher level of coordination in the framework of the Quadripartite Agreement - was held at ABACC headquarters in October. The group discussed, among other subjects, the implementation of unannounced inspections by ABACC and the IAEA, the common use of equipment, remote monitoring systems, status of facility attachments negotiations, aspects of the implementation of the Additional Protocol by the IAEA and enhanced cooperation between ABACC and the IAEA.

(a) The completion of the discussion of the safeguards approach for the Isotopic Enrichment Laboratory (LEI) that culminated with the approval by the Parties of the document entitled "BRN - Safeguards Approach", in October. This document consolidated all the safeguards activities of the LEI and will form the basis for the Facility Attachment negotiations that are already underway. So within this context, ABACC and Brazil began to analyze possible alternatives for the safeguards approach at the LEI, in case of prolonged production of enriched uranium at 19.9%. A preliminary draft was discussed with the CNEN and the CTMSP at meetings held at ABACC in September and November. At the request of Brazil, this issue was dealt within a preliminary basis at the meeting of the IAEA and ABACC held in December at the ABACC headquarters.

(b) The approval of the updated version of the document entitled "ABACC/IAEA Arrangements for Unannounced Inspections and Swipe Sampling during Announced and Unannounced Inspections at BRN". This document contains all the provisions for coordinating the activities between the two organizations during unannounced inspections at the LEI and for environmental swipe sampling collection. Prepared by ABACC, this document was presented to the IAEA for consideration on October and approved at the Coordination Meeting between the ABACC and the IAEA held in December at the ABACC headquarters. During the enriched uranium production campaign at 19.9%, the IAEA launched its regime of unannounced inspections at the LEI, coordinated with ABACC. Consequently, the safeguards project was fully implemented at this facility.

(c) Significant progress was achieved in negotiating the safeguards approach for the USIDE enrichment facility. Under the Bilateral Agreement, the CNEN and the CTMSP presented their comments at a meeting with ABACC held in September, on the documents entitled "Announced and Unannounced Inspection Procedures by ABACC for USIDE" which was forwarded by ABACC to the parties in July. Consolidating the approved modifications, a fresh version of the document was forwarded to CNEN for consideration in October. Under the aegis of the Quadripartite Agreement, the text of the document entitled "BRF- Safeguards Approach" was approved by the parties at the enrichment meeting held in December, and was then forwarded by ABACC to the Parties for formal approval. Furthermore, it was decided to carry out a trial unannounced joint inspection by ABACC and the IAEA in March 2002. It is expected that from April 2002 onwards, the safeguards approach will be fully implemented.

(d) The approval of the wording of the document entitled "ABACC/IAEA Arrangements for Unannounced Inspections and Swipe Sampling during Announced and Unannounced Inspections at BRF". This document contains all provisions for coordinating the activities between the two organizations for unannounced inspections at USIDE, and for collecting swipe samplings. Prepared by ABACC, this document was presented to the IAEA for consideration, with its wording agreed at the Coordination Meeting between ABACC and the IAEA held at the ABACC offices. Formal approval is expected to take place prior to the trial unannounced inspections scheduled for March 2002.

(e) Preliminary discussions began on the safeguards approach for the *Indústrias Nucleares do Brasil* (INB) enrichment plant at Resende, during the meeting of the enrichment experts group in December. Brazil agreed to forward the Design Information Questionnaire (DIQ) on this facility in January 2002.

Two coordination meetings between ABACC and the IAEA took place in 2001, one at the IAEA headquarters in June and the other at ABACC in December. At these meetings, as is normal practice, the situation of the Facility Attachment negotiations was reviewed and also the situation of the application of safeguards in sensitive facilities. Additionally, equipment development plans and acquisitions were analyzed. In addition to enrichment topics already mentioned, some other points warrant particular attention: the decision to replace the surveillance equipment at the Atucha I Nuclear Power Plant by a digital surveillance system owned by ABACC; the approval of the draft design for a bundle counter at Atucha I; the replacement of the bundle counter at the Embalse Nuclear Power Plant; and the significant progress in preparing and discussing the "Guidelines for Joint Inspection Activities" for specific facilities.

A regular meeting of the Liaison Sub-committee - LSC under the Quadripartite Agreement was held on March 29 and 30 at the ABACC offices. On that occasion, the ABACC proposal was discussed for fresh uranium fuel enriched at 0.85%, which is used in some Argentine facilities. An action plan was agreed, which includes testing the neutrons coincidence collar at the CONUAR Fuel Fabrication Plant for metering Atucha 1 type fuel. The initial test phase has already been completed, with the results being analyzed by ABACC. Consideration was also given to the proposal put forward by this Agency to set up a bundle counting system for irradiated fuel removed from the core of the Atucha 1 reactor. Finally, the LSC reviewed the safeguards implementation situation under the Quadripartite Agreement.

The 10th Facility Attachments Negotiation Meeting covering the Brazilian facilities was held on June 6 in Vienna. On that occasion, the documents were discussed for one facility and for one LOF (Locations Outside Facilities), reviewing the situation of the Design Information Questionnaires (DIQs) of Brazilian facilities. In the course of 2001, five new documents entered into effect, making a total of 38 documents in effect.

The evaluation of the inspections carried out jointly with the Operations area was slightly delayed during the second half of the year due to the implementation of the new data processing and inspection report program. This also caused a minor

delay in the notifications forwarded to the National Authorities on the results of the inspections and in forwarding the reports to the IAEA.

Informal discussions continued on the Draft Additional Protocol to the Quadripartite Agreement. For this purpose, a meeting was held between Argentina, Brazil and ABACC in March at the ABACC offices, analyzing the comments of the IAEA on the Draft Additional Protocol to the Quadripartite Agreement, which was delivered by the three parties to the IAEA in September 2000. This issue was also covered by meetings between Argentina and Brazil held in August and October.

The ABACC Planning and Evaluation Officer, Dr. Marco Marzo, attended four meetings of the IAEA's Integrated Safeguards Specialists Group, held in Vienna in February, May, September and November.

Operations

ABACC continued with the routine and ad-hoc inspections at various facilities in both countries, coordinated with the International Atomic Energy Agency (IAEA). In 2001, 56 inspections were held at Argentine facilities and 59 inspections at Brazilian facilities, which required an inspection effort of 379 inspector-days in the field and an availability rate of 723 inspector-days, as shown in the following Table:

Type of inspection	Argentina	Brazil	Total
Physical Inventory Verification (PIV)	22	21	42
Interim Inspections	34	38	72
Total Inspections	56	59	115
Inspection effort (in inspector-days)	**240**	**139**	**379**
Inspector Availability (in inspector-days)	**435**	**288**	**723**

ABACC and IAEA inspectors during service activities of surveillance system at Atucha Power Plant in Argentina.

In February, the Special Irradiated Fissionable Material Deposit in Argentina *(Depósito de Material Físionable Especial Irradiado)* transferred to the USA all high-enrichment irradiated fuels, allowing the system of quarterly interim inspections at this facility to be terminated, that were run to ensure timeliness. However, the global inspection effort should not be reduced, as the expansion of the old Fuel Fabrication Plant in Brazil started up operations, currently called the Nuclear Fuels Plant *(Fábrica de Combustíveis Nucleares)*, which is now equipped with a complete fuel production process, starting at UF_6.

The Operations area coordinated the activities overseeing the constructions of storage silos for irradiated fuels at the Embalse Nuclear Power Plant in Argentina. In August, inspections were carried out to modernize the fuel counting equipment at this plant. In order to fine-tune the inspection efforts an unannounced inspection was carried out in September, jointly with the IAEA, to verify the conformity of the construction of these silos, compared to the design submitted.

In order to enhance their efficiency and efficacy, ABACC and the IAEA completed the final non-destructive analysis (NDA) tests for natural uranium powdered dioxide (UO_2). The measurements used the NAIGEM software, version 1.51 with a sodium iodide detector - NAI(Tl). The results obtained by ABACC were fully satisfactory and were forwarded to the IAEA. In September, joint inspections were carried out in Argentina at two facilities, applying non-destructive analyses to untreated powdered UO_2, in parallel for sampling for destructive analysis (DA). The result of the NDA were satisfactory and it is expected that in 2002 ABACC and the IAEA will implement this method completely in order to verify partial defects in the natural powdered UO_2, replacing the DA sampling method.

The surveillance camera

Also in September, tests were run in Argentina for the application of the neutron coincidence collar to low-enrichment fuels, in order to measure partial flaws in fuel elements. The results for the measurements with the bare fuel element are satisfactory, while other tests must still be carried out in order to determine the measurement calibration factor with the fuel in the protection casing.

In early November, a trial unannounced inspection was carried out at the Isotopic Enrichment Laboratory - LEI at CTMSP-Brazil, with the participation of the IAEA and following the approach agreed under the Quadripartite Agreement. This exercise was carried out with no problems, and the experience obtained was rated as very valuable for upgrading the operating procedures for the unannounced inspections.

Within the context of the enrichment campaign up to 19.9% at the LEI (from November 10 through December 17, 2001) ABACC took part in four unannounced inspections jointly with the IAEA; two of them were triggered by ABACC. The results were satisfactory.

Discussions continued with the IAEA on fine-tuning the inspection efforts at the facilities in both countries. Two lines of action are being worked on with regard to this topic. The first, developed by ABACC together with the IAEA and the National Authorities is aimed at the optimization of the efficiency and efficacy of the inspections, taking into consideration the frequency, number of inspectors, nuclear material involved and the type of facility, in the light of the safeguards criteria of both organizations entities. Significant progress has been achieved on this topic.

The second line of action is based on the introduction of the Joint Inspection concept, which is designed to carry out any safeguards activity only once during the inspection, with the results being used by each entity. During the 13th coordination meeting between ABACC and the IAEA held in Vienna in June, ABACC presented the IAEA with a document entitled "Framework for Enhancing the Cooperation between the IAEA and ABACC". This document describes the efforts undertaken in seven areas of cooperation between the ABACC and the IAEA, and analyses the activities that could be implemented in the near future. When approved, the document will establish the bases for preparing the individual guidelines for the Joint Inspection activities at each facility. The Joint Inspection activities should be gradually implemented and it is expected that within a period of two to three years the Joint Inspection System will be effect for facilities in both countries. To do so, it is assumed that common procedures will be agreed in the near future for auditing the records, finalizing the procedures for common use between ABACC and the IAEA, the procedures for the common use for portable non-destructive analysis (NDA) equipment, and working papers that are common to both organizations covering each safeguards activity described under each agreed guideline.

Together with the Planning and Evaluation area, routine inspection assessment activities continued, with the corresponding notification of the results to the respective National Authorities. Additionally, reports were issued that should be forwarded to the IAEA, for facilities whose Facility Attachments are already effective.

At the start of the year, development began on a new computer system and data-base designed to monitor and record these inspection activities, with the Operations area being responsible for implementing this system, which is rated by the ABACC Secretariat as one of the priorities for 2001. The officers in this area are doing their utmost to update and modernize the old ABACC Operations data system, working closely with a team of programmers from an outsourced company. This new system will allow connections between the Operations areas and the different areas and sectors of ABACC that need to consult the inspection information, and is currently at the test and validation phase. The information handled by this new system will be both technical and administrative, integrating certain administrative sectors with the technical area, and making reports available.

Technical Support

A significant factor in achieving one of the high-priority targets of ABACC, improvements continued for the Non-Destructive Analysis measurement method used by the LEI and USIDE for ensuring that there is no nuclear material build-up behind the panels covering the centrifuges. After several measurements at these facilities, appropriate calibration mechanisms were established for the passive gamma and neutron measurements, as well as for a neutron transmission measurement. The neutron transmission measurements are of the Go / No-Go type. The ABACC and IAEA neutron detectors were used for these tests, as well as the electronic detector developed by ABACC. The special equipment built by CTMSP for the IAEA for the Go / No-Go measurements was tested with the software during an inspector training course, presenting satisfactory results. The system received by ABACC is also in a position able to test the software as soon as it is transferred by the IAEA.

Vacoss seal applied to an EMOSS surveillance equipment.

EMOSS surveillance equipment being tested at ABACC offices before its installation at the facility.

Designed and built jointly with the Nuclear Engineering Institute (IEN), a mapper for the Embalse silo replaced its fingerprint measurement detectors (radiation profile emitted by spent elements throughout the height of the silos) by less sensitive detectors. These new and recently-acquired detectors are designed to ensure easier identification with better definition of the radiation coming from the Cs 137 present in spent fuels, and are ready for field testing. On the other hand, in order to carry out these measurements, the IAEA adopted the new mini-multichannel device, replacing the old Davidson. Consequently, in cooperation with the IEN, ABACC is modifying the mini-multichannel device that could also replace its own Davidson equipment, which is already obsolete, with spare parts no longer available for repair.

In order to enhance the effectiveness of verifying the fresh fuels, a detector lifting system was installed at the Nuclear Fuels Plant (FEC) called the neutron coincidence collar. Through this, it is now possible to select random axial position on the fuel element for measurement. Developed jointly with the Safeguards Coordination Unit under the Brazilian National Nuclear Energy Commission (CNEN), this project was tested and presented good results, however, the detector alignment process required fine-tuning in the position measuring the fuels. This task is being carried out with the cooperation of CNEN.

A smaller and more efficient neutron collar built by the IAEA for measuring Atucha type fuel was calibrated at CONUAR, with the participation of Argentine technical experts and both agencies. A report on these activities is being drawn up by ABACC and the IAEA in order to analyze whether or not future tests are required before it is used for safeguards.

In order to measure the nuclear material in hold-up at the Pilcaniyeu enrichment facility in Argentina, an exercise was carried out to approve new analysis software during its installation. This program was initially assessed using the results of the measurements obtained by ABACC in 1995 and 1996, achieving results with the maximum deviation of 20% of the declared value. Attended by representatives of ABACC, CNEN, the Nuclear Regulatory Authority (ARN) and the US Department of Energy (DOE), a meeting was held to analyze the results. These results were rated as conclusive for validating the method, whose accuracy was classed as satisfactory for safeguards purposes.

The routine seal-reading and TLDs activities continued normally, as well as spectrum storage, detector calibration, preparation for the equipment for the inspections, specific inspector training prior to each inspection and forwarding sample for analysis (DA and Swipe Sample when necessary). The analysis carried out by the ABACC network is up-to-date so far.

Preparing for the quality assurance of its laboratory network, ABACC exchanged with the IAEA the results of destructive analysis of real samples collected during the inspections carried out in 2001. The comparison of these results shows that some of the laboratories in the ABACC network performed better when taking part in inter-comparison exercises. However, the results of all the activities complied with the accuracy levels required for safeguards. In order to discover how to upgrade the ABACC performance in this field of destructive analysis, six specialists were invited from this field, three from each country, in order to discuss the comparison of all the results found by the IAEA and the ABACC for samples that were analyzed on a destructive basis. This advisory group issued a series of recommendations that are being followed by ABACC in order to upgrade the quality control at its laboratories.

Modifications were introduced to the digital surveillance system (SDIS) installed at the Angra 2 Nuclear Power Plant in order to reduce problems caused by component defects (hard disks) due to high temperatures. After these modifications, a reduction of five degrees was noted in the operating temperature. Various tests carried out on the SDIS system were undertaken by ABACC, in order to prepare the maintenance and service procedures during inspections.

ABACC also took part in tests involving the bundle counter at Embalse, which was modernized by IAEA experts. During these tests, photographs were taken that will allow the ABACC inspectors to be trained in the use of this type of equipment, jointly with the IAEA. Alis Cameras were installed at the Embalse Nuclear Power Plant, redundant to the existing MUX systems during the period when the bundle counter was out of operation.

Surveillance systems (EMOSS) for the new perimeter were successfully installed at the Isotopic Enrichment Laboratory (LEI). Additionally, WCOSS type seal adaptors were also installed, for joint use of the surveillance system during unannounced inspections with the IAEA.

At the 13th coordination meeting between ABACC and the IAEA, the corresponding equipment acquisition plans were presented for 2001. On this occasion it was decided that the surveillance equipment at the Angra 1 Nuclear Power Plant should be replaced by a digital system, undertaken by the IAEA, with the replacement of the MIVS system at the Atucha I Nuclear Power Plant undertaken by ABACC.

Images of training course on unannounced inspections for ABACC and IAEA inspectors, held at IPEN.

The NAIGEM software (version 1.51) for measuring natural uranium with a NAI(TI) detector is being applied normally during the inspections where it is necessary to measure drums containing natural uranium. New detectors with higher resolution are being acquired for working more closely with the conditions required by the software, enhancing the accuracy of the enrichment measurements.

A technical visit to the Atucha I Nuclear Power Plant was undertaken in order to analyze the details of the installation of the surveillance system. Two neutron dose rate measurements were taken at different points of interests, where the cameras and the server could be installed, checking that the rate was below 1mR/h at all these points. This rate is below the value for which the IAEA detected some flaws in this surveillance equipment. On this same occasion, various aspects of the design and installation of the bundle counter system at this Station were analyzed. The next stage for designing this equipment will be coordinated with the Argentine National Authority, taking into account the recommendations received from the IAEA.

New laptop computers were acquired in order in order to run the mini-multichannel devices. This equipment is being tested and should be used in the field shortly. Additionally a new slab-type neutron detector was received which has already been successfully tested and is available for inspector training courses and/or back-up.

Nuclear Material Accounting

In order to implement the joint inspection system with the IAEA, proposed by ABACC in the document entitled "Framework for Enhancing the Cooperation between the IAEA and ABACC", these two agencies are studying a common procedure for auditing the records during the safeguards inspections in Argentina and Brazil. The procedure currently used by ABACC involved the use of software updating the inspection data-base, as well as the field audit. This software includes cross-referencing functions for data drawn from the report and the records audit at the facility, checking their consistency as well as following up on outstanding aspects in a fast and efficient manner. During 2001, 1020 lines of updated data were processed through this software, as well as 36 correction lines resulting from 57 audits carried out in 2001. After the initial discussions during the second half of 2000, the basic assumptions were defined in late January 2001 at a meeting held in Vienna, underpinning the definition of a procedure common to these two organizations. ABACC introduced some modifications into its current procedures for auditing the records, and completed the initial phase of modifying its software, in order to handle information in the format required by the IAEA.

In order to train its inspectors in the use of this new software for auditing records jointly with the IAEA, ABACC ran record audit courses from October 17-19 and December 18-20 in Buenos Aires, and on October 23-25 in Rio de Janeiro. From November 12-16 the officers in this sector met with the IAEA's Safeguards Operations-B sector (IAEA/SGOB) in order to continue these discussions seeking a common procedure for record audits. ABACC demonstrated the software and presented exercises run with real data drawn from inspections already carried out at two Argentine facilities and two Brazilian facilities. These exercises were undertaken by the IAEA's inspectors in order to test the nw software. With the participation of the IAEA's Safeguards Information Treatment Sector (SGIT), the data output format was discussed for the joint software in order to allow feed the information directly into the IAEA system. Both agencies agreed to launch a test period in 2002, which would last at least six months.

ABACC inspector is trained on the use of the new software for reports auditing.

Updating the accounting records data-base involved processing 2011 lines of inventory changes and 4356 lines related to the nuclear material inventory, corresponding to 504 accounting reports received from Argentina and Brazil from January to December 2001. It should be stressed that the error rate in the reports forwarded to the IAEA remains almost nil, with this good performance supported directly by the training offered to the operators by their National Authorities including the course offered by the Argentine Nuclear Regulatory Authority (ARN) in May in Buenos Aires, with one of the Brazilian accounting officers participating as an instructor.

The good quality of the reports has been accompanied by punctuality. ABACC suggested a procedure to the National Authorities in Brazil and Argentina, as well as to the data processing sector of the IAEA (SGIT), using encrypted e-mail in order to transmit the accounting reports from the two countries to ABACC, and from there to the IAEA. Supported by the ABACC accounting software, the use of this procedure would allow a report to be forwarded by the National Nuclear Energy Commission (*Comissão Nacional de Energia Nuclear* - CNEN) or by the Nuclear Regulatory Authority (*Autoridad Regulatoria Nuclear* - ARN) to ABACC, which would be received on the same day by the IAEA, having been analyzed and corrected when necessary. ABACC intends to extend the use of this means of transmitting information to the Operations sector as well. With this in mind, during the 13th Coordination Meeting between ABACC and the IAEA, this international agency agreed to set up a mailbox and swap PGP (Pretty Good Privacy) keys in order to allow all official (encrypted) correspondence between the two agencies to be forwarded and distributed electronically.

Technical Cooperation

The Argentine and Brazilian laboratories participating in the inter-comparison rounds of the Safeguards Measurement Exercise (SME) presented their results and received the information from the organizer laboratories required to measure their performance, compared with laboratories in other countries and other networks. This exercise is organized by the New Brunswick Laboratory (NBL), under the aegis of the technical cooperation agreement between ABACC and the US Department of Energy (DOE), and the Nuclear Signatures Measurement Evaluation Programme (NUSIMEP 2) run by the Institute for Reference Materials Measurement (IRMM / JRC), which fall under the cooperation between ABACC and EURATOM. The results obtained by these laboratories were rated as satisfactory by ABACC.

Within the context of the cooperation between ABACC and the DOE, uranium pellets were forwarded for classification to the New Brunswick Laboratory (NBL), having been produced in Brazil and Argentina as secondary standards. They should then be measured by the laboratories in the ABACC network. This material should be distributed to the Brazilian and Argentine laboratories, on which occasion ABACC should run a seminar on quality control.

Still under the aegis of the cooperation agreement with the DOE, on May 7 and 9 ABACC organized a meeting with representatives of all Brazilian and Argentina laboratories taking part in the bulk type swipe sample analysis group. On this occasion, the laboratories submitted the results of their "Peach Leaves" standard measurements, distributed to them in advance. Three of the six participant laboratories managed to measure concentrations of around 15ng of uranium per gram of material with the necessary accuracy. These results qualified them to carry out this type of analysis.

Due to the events that took place in September in the USA, the activities related to swipe sampling, destructive analysis and NDA measurement, which were to be carried out with the participation of the US Department of Energy, were transferred to 2002, as well as the annual meeting of the Permanent Coordinating Group (PCG) between ABACC and the DOE. However, the newly-launched activities related to the new Action Sheet 13 continued. They consisted of a visit by three technical experts from the Pacific Northwest National Laboratory (PNNL) to the ABACC offices on December 4-6 2001, in order to run a seminar on information security and continue discussions on network structure and security, that has been underway between ABACC and the DOE since 1996. The topics presented at the seminar and discussed at the meeting included encryption tools, current network protection processes, platforms, protecting information in notebooks, network infrastructure, and personal access tools, in addition to network monitoring. These discussions included two Argentine specialists from the ARN and CAB/CNEA, as well as a specialist from CDTN/CNEN. This seminar was also attended by other Brazilian technical experts. A similar seminar is being planned for next year in Buenos Aires.

The second coordination meeting planned under the technical cooperation arrangement between ABACC and the Technology Center for Nuclear Control (TCNC) in Korea took place in July, on which occasion representatives of both parties met during the annual meeting of the Institute of Nuclear Materials Management -INMM, in the USA.

With regard to the cooperation between ABACC and the National Authorities in Brazil and Argentina, a Technical Cooperation Seminar was held in Buenos Aires in September, attended largely by Argentine participants, with some Brazilians. On that occasion, the projects presented were undertaken with the cooperation of technical experts in both countries.

Under the aegis of the cooperation with EURATOM, ABACC was represented at a meeting of its NDA Working Group, held from October 9-12. This group is drawing up the NDA Measurement Performance Values, with ABACC playing an active role.

In September, the Secretary and one Operations Officer met with the authorities of the Export Control and Non-Proliferation Directorate, Department of Trade and Industry of the United Kingdom. On that occasion, the following matters were discussed: strengthening and integration of safeguards; safeguards applied by ABACC and the IAEA in Argentina and in Brazil; safeguards applied by the IAEA and EURATOM in the United Kingdom; the role of regional accounting and control systems in the implementation of additional protocols on-line enrichment measurement systems; environmental sampling and interpretation of results; the UK support program for the IAEA; training programs and equipment availability; scope of technical cooperation between ABACC and the UK Safeguards Office.

Images of the training course on the use of mini multichannel analyzer and surveillance equipment held in Buenos Aires and in Rio de Janeiro under the aegis of the technical cooperation between ABACC and the US Department of Energy and ABACC / IAEA.

Staff Capacity-Building

In 2001, ABACC launched a systematic training program for the inspectors focused on non-destructive analyses using the mini-multichannel analyzer. This program is run in cooperation with the Brazilian National Nuclear Energy Commission (CNEN) and the Argentine Nuclear Regulatory Authority (ARN). The training program was defined, as well as the working form to be used and the evaluation mechanisms. The individual practical training lasts a full day including the appraisal. Each inspector is trained at least once and no more than three times a year. A theoretical model was forwarded to each inspector for prior reading. A specialist appointed by ARN trained the Argentine inspectors at the laboratories of ABACC and ARN, at the ARN head-offices, while two specialists appointed by CNEN trained the Brazilian inspectors, at the CNEN Safeguards Laboratory in Rio de Janeiro, as well as at the Nuclear and Energy Research Institute (IPEN) in São Paulo, and the Center for the Development of Nuclear Technology (CDTN), in Belo Horizonte.

Refresher workshop for inspectors on the use of mini-multi channel analyzer. This activity is performed in cooperation with the ARN and CNEN.

In May, two workshops were run to train the ABACC inspectors in non-destructive analysis (mini-multichannel analyzer (MMCA) and NaI(Tl), CdZnTe and HpGe detectors), as well as containment and surveillance equipment (VACOSS and COBRA Seals, Cosmos and Alis Cameras and SDIS and GARS Systems), lasting five days in Rio de Janeiro and five days in Buenos Aires. The technical speakers came from ABACC, CNEN, the DOE and the IAEA.

ABACC cooperated with the IAEA in the Regional Safeguards Course organized by that Agency in Buenos Aires in September. All the technical areas of ABACC were involved, giving technical and theoretical classes.

In the last week of October, a course was run for the ABACC and IAEA inspectors in São Paulo at ARAMAR (Iperó/SP) focused on unannounced inspections. A mock-up simulating a portion of the cascade hall with a UF_6 cylinder placed behind shielding was set up in a warehouse made available by IPEN and with the support of that Institute. In order to firm up this course, ABACC was supported by the participation of CNEN, ARN, DOE, CTMSP, IPEN, and the IAEA, in addition to its own technical staff. This course allowed the inspectors to be divided into groups of two, with all activities planned for the unannounced inspection procedures being carried out. On this occasion, the working papers were tested for the common use with the IAEA, with various interesting contributions being put forth from the practical standpoint.

4.3 Administrative and Financial Activities

The administrative and financial activities progressed normally, according to the ABACC Rules and Standards. The most relevant aspects are: a) the HLB Auditores firm carried out an audit of its financial statements, internal controls and application of their standards for the 2000 financial year, with this report submitted to the Commission of ABACC at the fist regular meeting of the year; b) the Annual Economic and Financial Balance Sheet of ABACC for 2000 was analyzed and approved by the Commission; c) the Annual Report for 2000 was approved and forwarded to the Governments of Brazil and Argentina, pursuant to the provisions in Article XI, item i) of the Bilateral Agreement; and d) a Working Plan was drawn-up for the year 2000 with the corresponding Budget, both approved by the Commission.

Activities were implemented for undertaking a full physical inventory of ABACC, which is already reaching its final stage. At the start of the next year, the necessary equity adjustments will be undertaken, after a general check by the Audits firm.

Various electricity-savings measures were introduced by ABACC, in order to meet the rationing target set by the Brazilian Government in order to avoid power cuts. Although not subject to this obligation, as it is an International Organization, ABACC managed to keep its consumption below the established limits.

The replacement cabling for the ABACC computer and communications continued to be installed, ensuring better protection for the equipment with more secure use of internal and external information at ABACC. The civil construction activities required to lay the cables for the new network have been completed and implementation is moving into the final stage.

STATEMENT OF EARNINGS FOR THE FINANCIAL YEAR
on December 31, 2001
(US$)

1. REVENUES	**3,059,316.62**
Contribution from the Governments of Brazil and Argentina	3,050,000.00
Foreign funding	0.00
Other revenues	9,316.62
2. EXPENDITURES	**2,716,708.30**
A) ABACC Resources:	
Personnel	1,568,005.01
Inspections	272,586.19
Technical Support	236,514.22
Coordination and Negotiation	230,012.33
Capacity-building and Technical Cooperation	57,441.60
Offices	262,801.47
Utilities	43,711.64
Transportation	11,172.20
Institutional Advertising	38,811.76
Balance of Financial Transactions	(70,276.40)
B) Foreign Funding:	
Technical Cooperation Agreements	69,241.70
Balance of Financial Transactions	(3,313.42)
3. DEPRECIATION OVER THE FINANCIAL YEAR	**288,204.93**
4. REVERSAL OF PENDING REVENUES	**00.00**
5. COMPENSATION FOR CONTRIBUTIONS	**00.00**
6. INVESTMENTS OVER THE FINANCIAL YEAR	**311,279.42**
With ABACC funds	261,796.29
With foreign funds	49,483.13
7. PENDING CREDITS, CONTRIBUTIONS AND ADVANCES	**519,904.46**
8. EARNINGS FOR THE FINANCIAL YEAR	**54,403.39**

ABACC Commission in 2001

Full Members

for the Federative Republic of Brazil

Ambassador Luiz Augusto Saint-Brisson de Araujo Castro
Director General, Department of International Organizations
Ministry of Foreign Affairs

José Mauro Esteves dos Santos
Chairman
National Nuclear Energy Commission

In June 2001,
Ambassador Antonio José Vallim Guerreiro is
appointed the Director General of the Department of
International Organizations and a Member of the ABACC Commission

For the Republic of Argentina

Pedro Radl Villagra Delgado
Director General for International Security,
Nuclear & Space Affairs
Ministry of Foreign Affairs,
International Trade & Religion

Antonio Abel Oliveira
Chairman
Nuclear Regulatory Authority

In March 2001,
Ambassador Atilio Norberto Molteni is appointed Director General for
International Security, Nuclear & Space Affairs, Ministry of Foreign Affairs,
International Trade & Religion and Member of the ABACC Commission

In October 2001,
Lic. Eduardo D'Amato is appointed Chairman of the Nuclear Regulatory
Authority and Member of the ABACC Commission

Acted as Alternate Members

Ana Maria Sampaio Fernandes
(Alternate for Luiz Augusto Saint-Brisson de Araujo Castro and Antonio Guerreiro)

Ludrcio Antonio Vinhas
(Alternate for José Mauro Esteves dos Santos)

Gerardo Ezequiel Bompadre
(Alternate for Pedro Villagra Delgado)

Sonia Fernández Moreno
(Alternate for Antonio Oliveira and Eduardo D'Amato)

ABACC Secretariat in 2001

Carlos Augusto Feu Alvim da Silva
Secretary
December 12, 2000 - December 11, 2001

Elias Palacios
Deputy Secretary
Took office as Secretary on December 12, 2001

Technical Area

Alfredo Lucio Biaggio
Planning & Evaluation Officer

Horacio Lee Gonzales
Operations Officer

Rubén Nicolás
Nuclear Material Accounting Officer

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Acronyms & Abbreviations

AATN:	Asociación Argentina de Tecnología Nuclear
ABEN:	Associação Brasileira de Energia Nuclear
ACDA:	Arms Control and Disarmament Agency
IAEA:	International Atomic Energy Agency
AN:	National Authority
ARN:	Autoridad Regulatoria Nuclear
ASO:	Australia Safeguards Office
BNFL:	British Nuclear Fuel Limited
CAB:	Centro Atómico Bariloche
CAC:	Centro Atómico Constituyentes
CAE:	Centro Atómico Ezeiza
CCHEN:	Comisión Chilena de Energía Nuclear
CDTN:	Centro de Desenvolvimento da Tecnologia Nuclear
CEA:	Commissariat à l'Énergie Atomique
CETAMA:	Commission d'Etablissement des Méthodes d'Analyses
CNE:	Central Nuclear Embalse
CNEA:	Comisión Nacional de Energía Atómica
CNEN:	Comissão Nacional de Energia Nuclear
CNSNS:	Comisión Nacional de Seguridad Nuclear y Salvaguardias de México
CONUAR:	Combustibles Nucleares Argentinos S.A.
CTM-SP:	Centro Tecnológico da Marinha do Brasil em São Paulo
DIQ:	Design Information Questionnaire
DOE:	US Department of Energy
DAMRI:	Département des Applications et de la Métrologie des Rayonnements Ionisants
EECC:	Elementos Combustibles
ESARDA:	European Safeguards Research and Development Association
EURATOM:	European Atomic Energy Community
FA:	Facility Attachment
FEC:	Fábrica de Elementos Combustíveis
ICR:	Inventory Change Report
IEN:	Instituto de Engenharia Nuclear
INB:	Indústrias Nucleares do Brasil
INFCIRC:	Information Circular (IAEA) (INFCIRC / 435: Circular that published the Quadripartite Agreement)
INMM:	Institute of Nuclear Material Management
INVAP:	Investigación Aplicada S.E.
IPEN:	Instituto de Pesquisas Energéticas e Nucleares
IPSN:	Institut de Protection et de Sûreté Nucléaire
IRD:	Instituto de Radioproteção e Dosimetria
IRMM:	Institute for Reference Materials and Measurements
JRC:	Joint Research Centre
LANL:	Los Alamos National Laboratory
LEI:	Laboratório de Enriquecimento Isotópico
LOF:	Location Outside Facility - any place where nuclear material is used or stored in effective quantities of 1 Kg or less
MBA:	Material Balance Area
MBR:	Material Balance Report
NBL:	New Brunswick Laboratory
NDF:	Non-Proliferation and Disarmament Fund
NMCC:	Nuclear Material Control Center - Japan
NUSIMEP:	Nuclear Signatures Measurement Evaluation Programme
OPANAL:	Organismo para la Proscripción de las Armas Nucleares en la América Latina y el Caribe
PCG:	Permanent Coordination Group - ABACC / DOE Cooperation Agreement
PIL:	Physical Inventory List
PNL:	Portsmouth National Laboratory
PNNL:	Pacific Northwest National Laboratory
REIMEP:	Regular European Interlaboratory Evaluation Programme
SESAL:	Serviço de Salvaguardas
SCCC:	Sistema Comum de Contabilidade e Controle de Materiais Nucleares
SNL:	Sandia National Laboratory
TNP:	Treaty on the Non-Proliferation of Nuclear Weapons
TRAMs:	Documento de Transferência de Amostras
USIDE:	Planta Piloto de Enriquecimento de Urânio