ABACC

Annual Report 1994

Annual Report

1994

ABACC

BRAZILIAN-ARGENTINE AGENCY FOR ACCOUNTING
AND CONTROL OF NUCLEAR MATERIALS

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ABACC COMMISSION
Members

For the Federative Republic of Brazil

José Maurício Bustani
Director of the Department of International Organisms
Ministry of External Relations

Márcio Costa
President
National Nuclear Energy Commission

José Mauro Esteves dos Santos
President
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Enrique De La Torre
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Nuclear and Space Issues
Ministry of External Relations,
International Commerce and Religious Affairs

Manuel Angel Mondino
President of the Directory
National Atomic Energy Commission

Dan Jacobo Beninson
President of the Directory
National Nuclear Regulation Agency

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[1] From 13 July 1994, Dr. José Mauro Esteves dos Santos, President of the National Nuclear Energy Commission, replaced Dr. Márcio Costa as the Member in office for Brazil on the ABACC Commission.

[2] From 15 December 1994, Dr. Dan Jacobo Beninson, President of the Directory of the National Nuclear Regulation Agency, replaced Dr. Manuel Mondino as the Member in office for Argentina on the ABACC Commission.

INTRODUCTION

This Annual Report describes the activities carried out during 1994 by the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials - ABACC.

In compliance with its objective of administering and applying the Common System for Accounting and Control of Nuclear Materials - SCCC, established under the Agreement between the Federative Republic of Brazil and the Republic of Argentina for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement), the activities of ABACC have developed in a satisfactory manner, achieving the target of completing the actions required to verify the entire inventory of nuclear materials and verify all the technical questionnaires of installations in the two nations involved.

The outcome of these efforts is that all the nuclear materials found in all nuclear activities in both Brazil and Argentina were under the control of ABACC by 31 December 1994.

An event that took place during 1994, and which warrants particular attention due its close relationship to ABACC activities, is the entry into effect on 4 March of the Quadripartite Agreement signed between the two countries, ABACC and the International Atomic Energy Agency for the application of safeguards. Consequently, almost all inspections carried out after June were coordinated with those of the IAEA, as established in the General Part of the Subsidiary Arrangements of the above-mentioned Agreement.

Based on its verification activities carried out in compliance with the basic commitment of the Bilateral Agreement, and in compliance with the procedures established by the SCCC, ABACC detected no event that might indicate any diversion of significant quantities of nuclear materials for the fabrication of weapons or other nuclear explosive devices.

The Secretary

BASIC UNDERTAKING

Agreement between the Federative Republic of Brazil and the Republic of Argentina for the Exclusively Peaceful Use of Nuclear Energy

(Bilateral Agreement)

entry into effect: 12 December 1991

(Article 1)

1. The Parties undertake to use the nuclear material and facilities under their jurisdiction or control exclusively for peaceful purposes.

2. The Parties also undertake to prohibit and prevent in their respective territories, and to abstain from carrying out, promoting or authorizing, directly or indirectly , or from participating in any way in:

a) the testing, use, manufacture, production or acquisition by any means of any nuclear weapon; and

b) the receipt, storage, installation, deployment or any other form of possession of any nuclear weapon.

3. Bearing in mind that at present no technical distinction can be made between nuclear explosive devices for peaceful purposes and those for military purposes, the Parties also undertake to prohibit and prevent in their respective territories, and to abstain from carrying out, promoting or authorizing, directly or indirectly , or from participating in any way in the testing, use, manufacture, production or acquisition by any means of any nuclear explosive device while the above-mentioned technical limitation exists.

Agreement between the Federative Republic of Brazil, the Republic of Argentina, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials, and the International Atomic Energy Agency for the Application of Safeguards

(Quadripartite Agreement)

entry into effect: 4 March 1994

(Article 1)

The States Parties undertake to accept safeguards, in accordance with the terms of this Agreement, on all nuclear material in all nuclear activities within their territories, under their jurisdiction or carried out under their control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.

(Article 2)

a) The IAEA shall have the right and obligation to ensure that safeguards will be applied, in accordance with the terms of this Agreement, on all nuclear material in all nuclear activities within the territories of the States Parties, under their jurisdiction or carried out under their control anywhere, for the exclusively purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.

b) ABACC undertakes, in applying its safeguards on nuclear material in all nuclear activities within the territories of the States Parties, to co-operate with the IAEA, in accordance with the terms of this Agreement, with a view to ascertaining that such nuclear material is not diverted to nuclear weapons or other nuclear explosive devices.

c) The IAEA shall apply its safeguards in such a manner as to enable it to verify, in ascertaining that there has been no diversion of nuclear material to any nuclear weapon or other nuclear explosive device, findings of the SCCC. The IAEA's verification shall include, inter alia, independent measurements and observations conducted by the IAEA, in accordance with the procedures specified in this Agreement. The Agency, in its verification, shall take due account of the technical effectiveness of the SCCC.

(Article 3)

a) The States Parties, ABACC and the IAEA shall co-operate to facilitate the implementation of the safeguards provided for in this Agreement.

b) ABACC and the IAEA shall avoid unnecessary duplication of safeguard activities.

ABACC

Institutional Activities

- Meetings of the Commission
- Relations with the IAEA
- Technical Cooperation
- Acknowledgments and Awards to ABACC
- Participation in Lectures, Symposia and Seminars
- Visits
- Publications and Articles Published

Meetings of the Commission

The ABACC Commission held three Ordinary Meetings during 1994, which took the following principal decisions listed blow:

- Approval of the 1993 Annual Report of the Secretariat and request to forward the ABACC Annual Report to the Signatories of the Bilateral Agreement;
- Authorization for the Secretary to advise the IAEA of acceptance of the text of the General Part of the Subsidiary Arrangements to the Quadripartite Agreement;
- Creation of two new positions in the Secretariat, one Accounting Officer and One Technical Support Officer;
- Approval of the 1995 Work Plan and Budget of the Secretariat, on the basis of US$ 2,250,000;
- With regard to Treaty of Tlatelolco, the Commission required the Secretary to forward a half-yearly Report to the Governments of Brazil and Argentina, covering compliance with the obligations undertaken through the Quadripartite Agreement, so that the two countries could forward the corresponding notifications to the Secretary-General of OPANAL.

Two members of the ABACC Commission were replaced: in July, Dr. Márcio Costa was replaced by Dr. José Mauro Esteves dos Santos, while in December Dr. Manuel Mondino was replaced by Dr. Dan Beninson.

Relations with the IAEA

The entry into force of the Quadripartite Agreement on 4 March 1994 prompted an intensive relationship with the IAEA. In addition to various bilateral and trilateral inspection coordination meetings, and simultaneous inspection activities (further details are given in the chapter entitled Technical Activities), two General Coordination Meetings were held in May and October, for planning and assessing the implementation of the Agreement.

ABACC and IAEA inspectors at an inspection mission meeting

Article 19 of the Additional Protocol to the Quadripartite Agreement made provision for setting up a Liaison Committee, consisting of representatives of the four Parties to this Agreement, and which would basically be responsible for reviewing the implementation of the

coordination arrangements established in the Protocol, including examination of the inspection efforts and the development of safeguard methods and techniques. In compliance with the provisions of the Quadripartite Agreement, the first meeting of the Liaison Committee was held at the headquarters of ABACC on 31 May and 1 June.

Coordination of actions between ABACC and the IAEA could reduce unnecessary duplication of safeguards efforts, thus cutting the costs involved in unnecessary control measures. The coordination between ABACC and the IAEA also covers, inter alia: stipulation of random selection techniques for statistical sampling; verification and identification of standards; containment and surveillance methods; and verification measures.

Technical Cooperation

- *With the Brazilian National Nuclear Energy Commission (CNEN) and the Argentine National Atomic Energy Commission (CNEA)*

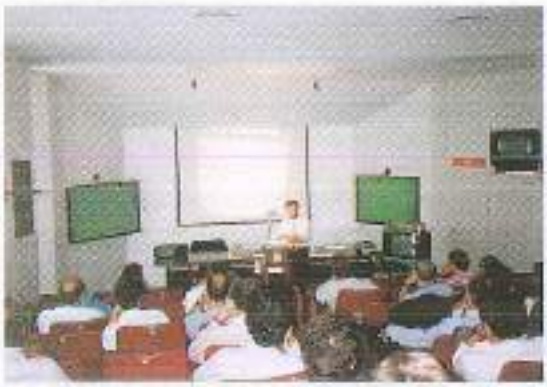
Inspectors receive practical training during the safeguards course

The cooperation with both institutions continued to make satisfactory progress. In addition to various bilateral meetings with each of the National Authorities of the two countries, two joint meetings of ABACC/CNEN/CNEA were held in March and September 1994. At these meetings, problems were discussed arising from the administration of the SCCC. They also offered an appropriate forum for the coordination of the actions necessary for implementing the Quadripartite Agreement at the institutional level.

The cooperation between CNEN and CNEA with ABACC fostered the setting up and activities of an advisory group for the ABACC Secretariat

for non-destructive analysis of nuclear materials, covered below in the chapter on *Technical Activities*.

In February, ABACC and CNEA signed a technical cooperation agreement under which the services and technical assistance offered to ABACC were regulated. These services cover the use of analytical laboratories, maintenance of equipment, whole body counting and individual dosimetry of external radiation. Both institutions continued to cooperate in the development of secondary isotopic standards, which also involved the participation of CNEN. Still under the auspices of this agreement, at the request of ABACC, CNEA is developing a mathematical model simulating a monitoring system in a UF_6 pipeline, in order to assess equipment designed for determining the maximum level of enrichment.



Inspectors in the classroom at CNEN headquarters

Also worthy of note is the second safeguards course for ABACC inspectors, organized by CNEN and held at its headquarters in Rio de Janeiro, with the support of ABACC, from 17-28 September. Fifteen Brazilian Inspectors, ten Argentine inspectors and twenty observers took part in this course, which was given by instructors from the Brazilian and Argentine National Authorities, as well as ABACC itself. Additionally, specific topics on this course were presented by instructors from the U.S., France, EURATOM and IAEA. The students attended lectures on theoretical and practical aspects of safeguards, received instruction on the use of equipment, and simulated physical inventory verifications.

Course participants

- *With the U.S.A.*

The past year was particularly favorable for the relationship between ABACC and the U.S.A. In April, the Secretary of ABACC and the Deputy Director for Non-Proliferation and National Security of the U.S. Department of Energy (DOE) signed an agreement formalizing cooperation activities for research and development in the areas of control, accounting and verification of nuclear materials, as well as advanced techniques for containment and surveillance for the application of international safeguards. As the first step in the implementation of this Agreement, the Project Coordination Group met in Washington D.C. in June to discuss the first activities to be carried out. Three activities were agreed upon: cooperation in safeguards training courses, inter-comparison laboratory activities, and cooperation in practical workshops for inspectors covering the use of equipment in the field.

After this meeting, the Deputy Secretary and two ABACC Planning and Evaluation Officers made technical visits to the Portsmouth Enrichment Plant and the safeguards sector of the Sandia National Laboratory. On this occasion, the ABACC officers were informed about surveillance and containment equipment, as well as remote monitoring equipment being developed for application in international safeguards.

With regard to the annual inspectors' course, an appreciable contribution was made by the technical staff from U.S. laboratories who participated as instructors in the second ABACC Inspectors' Course held in October. In counterpart, an ABACC instructor is scheduled to participate in the International Training Course on Implementation of State Systems of Accounting for and Control of Nuclear Materials to be held in Santa Fé, New Mexico, in April 1995.

Still under the aegis of the cooperation agreement, and with regard to inter-comparison laboratory activities, an Operations Officer and a Technical Support Officer visited the Sandia, Los Alamos and New Brunswick laboratories where they were informed about new destructive and non-destructive analysis techniques for nuclear materials. In return, two U.S. specialists in destructive analysis from the New Brunswick laboratory visited the Brazilian and Argentine laboratories that constitute the ABACC analytical network.

With regard to practical seminars, ABACC and the DOE coordinated the first event to be held in Argentina, scheduled for March 1995, with the cooperation of the National Nuclear Regulation Agency (ENREN).

Other cooperation activities were discussed during 1994 and should be implemented in 1995. These activities involve the participation of ABACC in the remote monitoring project being developed by Argentina and the DOE to monitor dry storage for spent fuel elements, as well as the development and appraisal of advanced containment and surveillance technologies for possible application in enrichment plants.

- *With France*

Cooperation activities between ABACC and the Commissariat à L'Energie Atomique (CEA), which began in 1993, progressed during 1994. They include: certification of secondary standards for uranium, cooperation in non-destructive analysis techniques and/or methods, training programs in the safeguards area, and French participation in ABACC inter-comparison laboratory program.

Within the sphere of these cooperation activities, ABACC received a contribution from the CEA of analytical and isotopic standards for destructive and non-destructive analyses, an analytical balance, and an alpha-beta contamination monitor.

CEA/CETAMA invited Argentine and Brazilian laboratories to participate in two of its inter-comparison circuits (EQRAIN and CISMAT). After consultations with CNEN and CNEA, ABACC indicated the laboratories which would take part in this exercise.

At the invitation of the ABACC Secretariat, the CEA appointed a specialist on two occasions to discuss the topic of containment and supervision techniques: the first time was to lecture at ABACC headquarters for Secretariat personnel and staffers from the Brazilian National Authority; the second was to participate as an instructor in the ABACC Inspectors' Training Course.

A visit to the CETAMA laboratories by one Argentine and one Brazilian expert, who participate in the ABACC inter-comparison program, is scheduled for 1995.

- *With EURATOM*

The ABACC Secretariat invited EURATOM Safeguards Director, Dr. Wilhelm Gmelin, to visit its headquarters and extended an invitation to that organization to participate in its Inspectors' Training Course in October.

This visit was not possible during 1994, but the ABACC Inspectors' Training Course had the participation of Dr. Sergio Guardini, from the

Ispra Research Center, who lectured on the topic of Verification of Physical Inventory.

- *With OPANAL*

The Secretary-General of OPANAL, Ambassador Enrique Román-Morey, visited ABACC in April and showed interest in the activities carried out by this agency. In December, the Ambassador invited the Secretary to participate in the seminar on Non-Proliferation: Viewpoints of Latin America and the Caribbean, organized by OPANAL for early 1995.

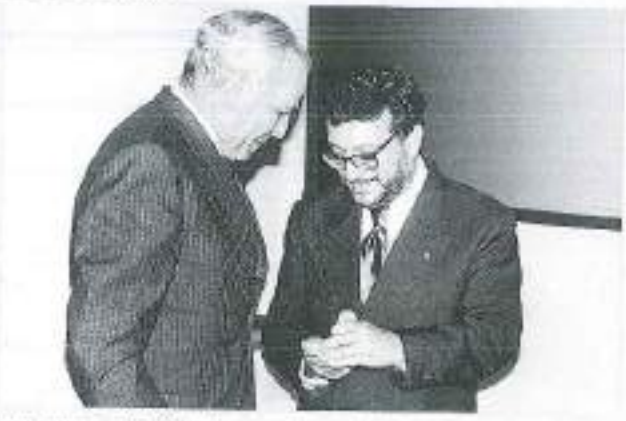
- *With the U.K.*

In February, the Secretary of ABACC was officially invited by the British Government to visit institutions and installations related to safeguards in the U.K.

As a result of this visit, an exchange of technical information was set up. ABACC received many articles on safeguard-related developments at the Harwell laboratory, and devoted special attention to some continuous UF_6 measurement systems in enrichment plants. ABACC intends to define the best and most reliable monitoring system for use in sensitive installations under its safeguards, and believes that a profitable area for cooperation with the U.K. could well be control equipment for this type of installation.

Acknowledgments and Awards to ABACC

Brazil's National Nuclear Energy Commission (CNEN) resolved to award ABACC the Octaciílio da Cunha Medal, in acknowledgment of the valuable services rendered by this agency for developments in the nuclear area. The Secretary received this medal during the commemorations celebrating the 38th anniversary of CNEN in October.



The Secretary of ABACC receives the medal from the President of the National Nuclear Energy Commission

PARTICIPATION IN LECTURES, SYMPOSIA AND SEMINARS

March

Jorge A. Coll, ABACC Secretary, Carlos Feu Alvim, Deputy Secretary, and Marco Antonio Marzo, Planning and Evaluation Officer, took part in the International Safeguards Symposium organized by the IAEA in Vienna, Austria.

Presentation: *The Role of a Regional Organization in the Application of Safeguards - The Example of ABACC.*

The Argentine Ministry of External Relations, International Commerce and Religious Affairs invited the Secretary to speak on the activities of ABACC to a group of members of Parliament, diplomats, representatives of scientific organizations, and journalists in Buenos Aires, Argentina.

April

Jorge A. Coll, Carlos Feu Alvim and Ana Claudia Raffo, Head of Institutional Relations for ABACC, took part in the Seminar on the Peaceful Uses of Nuclear Power and Non-Proliferation, held in San Carlos de Bariloche, Argentina.

Presentations: *Regional Systems: the SCCC and ABACC and The Activities of ABACC under the Quadripartite Agreement.*

May

Marco Antonio Marzo was invited by the Australian Safeguards Office to participate as a guest lecturer in the Regional Training Course on National Safeguards Systems in Canberra, Australia.

Presentation: *ABACC - The Brazilian-Argentine Safeguards System.*

Carlos Feu Alvim was invited by the U.S. Department of Defense to take part in the III Annual International Conference on Arms Control, in Virginia Beach, U.S.A.

Presentation: *The Role of ABACC as a Regional Nuclear Material Safeguards Agency.*

Alfredo Biaggio, Planning and Evaluation Officer, took part as an observer in the Seminar on Issues at the 1995 NPT Revision Conference, at the invitation of the Program for Promoting Nuclear Non-Proliferation, in Caracas, Venezuela.

June

Ana Claudia Raffo took part in the annual meeting of the Latin American Section of the American Nuclear Society, in Buenos Aires, Argentina.

Presentation: *Safeguards and the System Used by ABACC to Control Nuclear Materials in Nuclear Power Plants in Brazil and Argentina.*

Carlos Feu Alvim took part in the meeting organized by the Brazilian Nuclear Energy Association (ABEN) and the Argentine Nuclear Technology Association (AATN), in Foz do Iguassu, Brazil.

Presentation: *ABACC as a Regional Safeguards Agency.*

July

Marco Antonio Marzo represented ABACC at the annual meeting of the Institute of Nuclear Materials Management (INMM), of which this agency became an institutional member, in Florida, U.S.A.

August

Carlos Feu Alvim and Marco Antonio Marzo presented reports at the V General Nuclear Energy Congress, organized by ABEN, in Rio de Janeiro, Brazil.

Presentations: *ABACC as a Regional Safeguards Agency and Some Basic Criteria for the Application of a Common System of Accounting and Control of Nuclear Materials.*

Carlos Feu Alvim also took part in a round table on Evaluation of the Safeguards Agreements: Quadripartite and Tlatelolco.

September

The Secretary and the Head of Institutional Relations attended as observers the XXXVIII General Conference of the IAEA, during which the Secretary made a presentation on the activities of ABACC and the stage of implementation of the Quadripartite Agreement.

November

Two Accounting Officers, Rubén Nicolás and Lilia Palhares, took part in the Seminar on Safeguards Accounting Data and Reporting, organized by the IAEA in Vienna, Austria.

Presentation: *The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC).*

Marco Antonio Marzo was invited to take part in the II IPEN/CNEN Integration Week, in São Paulo, Brazil.

Presentation: *Application of Safeguards in Brazil and Argentina: ABACC*

Visits

- Councilor Roy Simpkins from the U.S. Embassy in Brazil, and Curtis Stewart, Mines and Energy Consul, from this same country
- Mr. Sergei Lipovoi from the Consulate-General of the Russian Federation in Rio de Janeiro
- Minister Councilor of the British Embassy in Brazil, Mr. Peter Jenkins
- Dr. Rodolpho Castello Branco, representative of COGEMA in Brazil
- The Secretary General of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean - OPANAL, Ambassador Enrique Román-Morey
- Professor Paulo Wroble, Pontifical Catholic University (PUC), Rio de Janeiro
- Professor John Redick, University of Virginia (USA)
- Mr. Mitchell Reiss, Woodrow Wilson Center (USA)
- Consul-General of the Argentine Republic in Rio de Janeiro, Minister Carlos Augusto Fasciolo
- Dr. Scott D. Tollefson, Graduate Naval College, Monterrey (USA)
- Professors Fernando de Souza Barros and Odair Dias Gonçalves, Physics Institute, Rio de Janeiro Federal University
- Secretary of the Brazilian Embassy in Vienna, Mr. José Marcos Nogueira Viana
- Deputy Director of the Nuclear Safety Division of the IAEA, Dr. Abel Gonzales
- Councilor Roy Simpkins and Colonel Eric Vranek, U.S. Embassy in Brazil
- Dr. Victor Mikhailov, Minister of Atomic Energy, Russian Federation
- Dr. Sergio Majdalani, Director, Minerals Area, Indústrias Nucleares do Brasil (INB)

Publications and articles published

- Annual Report 1993
- ABACC News - January/April 1994
- ABACC News - May/August 1994
- Marzo M., Biaggio A. and Raffo A.C., Nuclear Co-operation in South America: The Brazilian-Argentine common system of safeguards, IAEA Bulletin, Vol. 36, No 3, 1994, Vienna, Austria.

ABACC

Technical Activities

- Nuclear Material Accountancy
- Operations
- Planning and Evaluation
- Technical Support
- List of Abbreviations

Nuclear Materials Accountancy

From the start of its activities in July 1992 until the Quadripartite Agreement came into effect in March 1994, ABACC processed 3,170 lines of records related to inventory changes announced by Brazil and Argentina through their accounting records. Of this total, 1,254 lines referred to nuclear materials also subject to other bilateral and/or trilateral safeguards agreements, between these countries and the IAEA. During this period, a gradual transition was implemented, by groups of installations, from the report and records system in effect at the time in both countries (INFCIRC/66 type) to the records and report system covered by the SCCC (INFCIRC/153 type).

Based on the outcome of the above-mentioned transition exercise, and as established in the General Part of the Subsidiary Arrangements to the Quadripartite Agreement, ABACC forwarded to the IAEA the Initial Report on nuclear materials in Brazil and Argentina. The analysis of the Initial Report forwarded to the IAEA involved a computerized accounting data processing by category of nuclear material, which shows its consistency with the existing ABACC inventories. Such report reflected the initial inventory of nuclear material for both countries as of 31 March 1994.

From April onwards, ABACC began to forward accounting reports to the IAEA on a routine basis, showing inventory changes, submitted by the two countries as established in the Quadripartite Agreement, in the format covered in Code 10. Despite the major differences between the report system previously used in Brazil and Argentina, the negligible quantity of errors noted in the report submitted under the new reporting system shows the importance of the implementation efforts carried out by ABACC and the two countries involved, prior to the entry into effect of the above-mentioned Agreement.

By the end of December, the ABACC Secretariat had forwarded 374 reports to the IAEA, including 3,731 lines with data covering inventories and inventory changes in both countries.

On the other hand, the Accounting Area of the Secretariat continued to supply the Operations Area with the accounting information necessary to carry out inspections throughout 1994.

Operations

Considering that, in December 1993, ABACC had practically completed the initial inventory and design information verifications for installations subject only to the SCCC, inspection activities for 1994 began with the following objectives:

- Design information and initial inventory verifications of the installations already under Safeguard by the IAEA
- Carrying out interim inspections
- Continuation of design information verification of sensitive installations, and preparation of the respective Facility Attachments

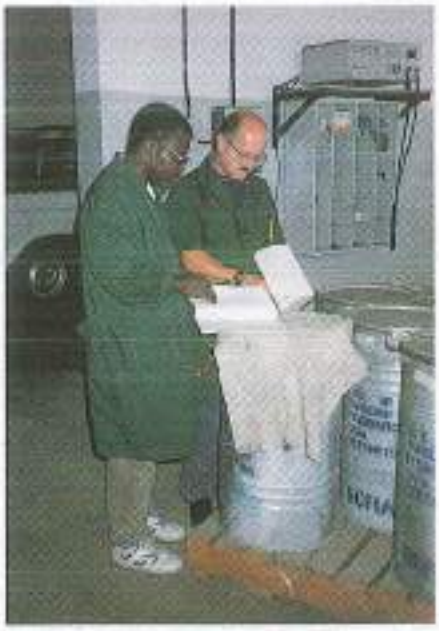
In compliance with these objectives, the following inspections were carried out in 1994:

Inspections	Brazil	Argentina	Total
Design Information Verification (DIQ)	33	40	**73**
Inicial Inventory and Interim Verifications	49	64	**113**
Total Inspections	82	104	**186**
Inspection Efforts (expressed in inspector-day)	557	949	**1506**

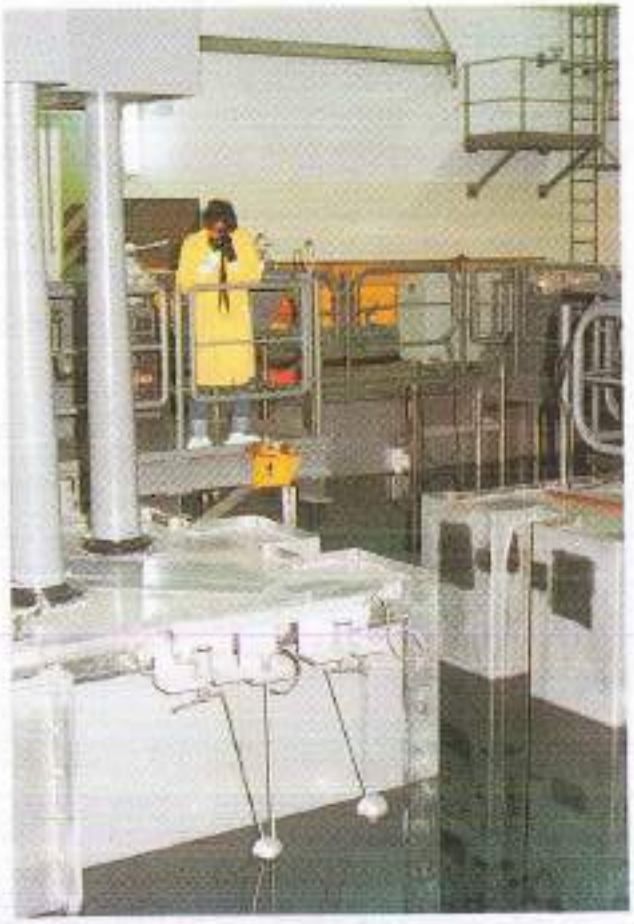
As the outcome of the inspection efforts of ABACC, by year-end 1994, the Secretariat had completed the actions required for the total verification of the initial inventory of nuclear material and all the DIQs for all installations in Brazil and Argentina.

With regard to the implementation of the Quadripartite Agreement, during the last week in March, two meetings were held: the first consisted of a quadripartite meeting to discuss the scope, content and verification of the Initial Report of the inventory of nuclear material; and the second, between ABACC and the IAEA, to discuss the first coordination and implementation actions for the Quadripartite Agreement.

The relationship between ABACC and the IAEA during this year benefited from the fact that the SCCC had been implemented by ABACC prior to



IAEA and ABACC inspectors carry out inspections simultaneously



ABACC Inspector uses Cherenkov while verifying spent fuels in nuclear plant

the Quadripartite Agreement entering into effect. ABACC implemented this control system with a view to the future relationships that it would maintain with the IAEA, in function of the safeguard activities which would arise under the implementation of this Agreement.

The IAEA started its verification inspections of the Initial Report and the Design Information Questionnaire (DIQ) of the Material Balance Areas (MBA) in June. From then on, the ABACC and IAEA inspections were coordinated, as covered in the General Part of the Subsidiary Arrangements, so that most of the verification activities could be carried out simultaneously.

With a view to achieving the effective coordination of activities with the IAEA, in addition to the corresponding pre- and post-inspection mission meetings, one bilateral and two tripartite meetings were held with the respective National Authorities in May, and repeated in October. At these meetings, discussions focused on the actions that ABACC and the IAEA would have to implement in order to avoid unnecessary duplication of efforts in applying their safeguards. Specific arrangements on this subject, however, will be agreed upon only in 1995.

Inspector carrying out measurements with HM-4 of fresh fuel

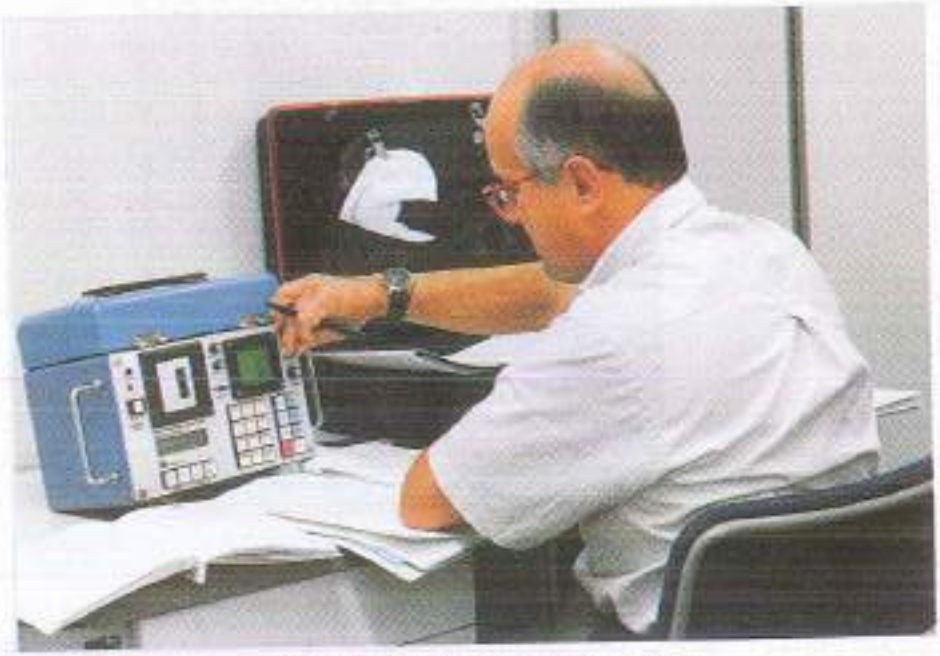
In August, the ABACC Secretariat completed the forwarding to the IAEA of the Design Information Questionnaires (DIQ) received from the Governments of Brazil and Argentina, of the following MBAs in these two countries:

Type	Argentina	Brazil	Total
Conversion Plants	7	1	**8**
Enrichment Plants	1	2	**3**
Fuel Fabrication Plants	3	1	**4**
Power Reactors	2	1	**3**
Research Reactors	5	3	**8**
Reserch & Development Installations	1	3	**4**
Critical and Sub-Critical Units	-	3	**3**
Deposits	3	2	**5**
LOFs * (fuel research)	3	5	**8**
LOFs (reprocessing research)	-	1	**1**
LOFs (analytical laboratories)	3	2	**5**
Outros LOFs	11	7	**18**
Total	**39**	**31**	**70**

(*) Locations Outside Facilities - any place where nuclear material is used or stored in quantities equal to or less than 1 Kg. effective.

Planning and Evaluation

The Planning and Evaluation Area of the Secretariat prepared an updated version of the General Procedures of the SCCC, incorporating two annexes covering Information and Communications, which was published and distributed to ABACC inspectors and, through the National Authorities, to Operators in installations in both countries.



ABACC Inspector preparing inspection report

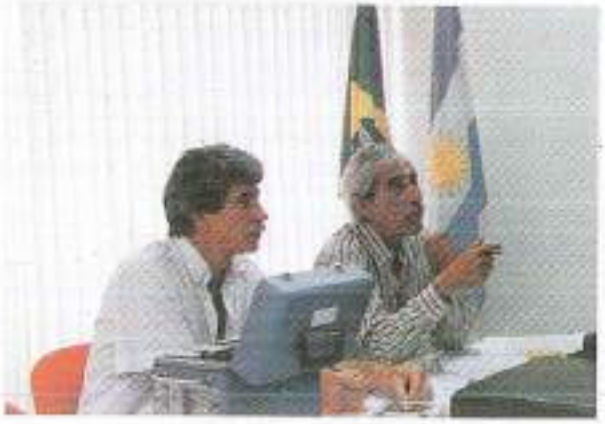
Assessment of the inspections continued on a routine basis, having completed the analysis of the results of the inspections carried out up to the end of September, with the inspections corresponding to the last quarter of the year undergoing the final analysis process. The discrepancies found in this assessment which could not be resolved by the ABACC inspectors during the corresponding inspections, were almost completely resolved through information provided later by the respective National Authorities.

The experience acquired on this matter helped improve the inspection reports. Consequently, a benchmark reference was prepared for drawing up inspection reports, and the structure of these inspection reports was revised. With regard to this latter point, the specific modules were completed covering the records audit, inventory verifications, containment and surveillance, as well as the format for the Summary of the Inspection Results and a Notification Model for these results.

The basic ABACC safeguards criteria were also prepared, after a detailed analysis of the IAEA safeguards criteria and the guidelines applied by EURATOM. The specific criteria for each type of installation will be prepared on a

case-by-case basis, founded on the safeguard approaches applied in the various installations.

With regard to the implementation of the Quadripartite Agreement, 23 of the 25 first proposed Facility Attachments were prepared and forwarded to the IAEA and the corresponding National Authorities. ABACC was responsible for the preparation thereof, as established in the General Part of the Subsidiary Arrangements.



Inspectors analyse inspection results

In September, a special mission from the IAEA, accompanied by ABACC officers, visited the uranium enrichment plant in Argentina and held meetings with the National Authority of that country and ABACC to discuss the safeguards strategies and approaches to be applied in this type of installation.

A similar visit was made to the isotopic enrichment laboratories in Brazil in November, with the same objectives as the mission to Argentina. The topics covered during this visit were once again discussed in a bilateral meeting (ABACC/IAEA) in December at IAEA Headquarters in Vienna, where both agencies submitted consultations under the auspices of Article 15 of the Additional Protocol to the Quadripartite Agreement.

The analysis and preparation of the documents related to sensitive installations in Brazil and Argentina involved a number of meetings with the respective National Authorities and Operators.

As the outcome of these actions, the corresponding draft Facility Attachments were prepared and forwarded to the IAEA, with the safeguards approaches justifying these documents. A major contribution was made by the Ad-Hoc Advisory Group of ABACC for sensitive installations, with regard to the treatment of these topics, as well as in function of the surveillance systems to be used, and the evaluation of the work carried out by the non-destructive analysis advisory group for assessment of the hold-up measurement method for gas diffusion enrichment plants. In all, four meetings were held by the Ad-Hoc Advisory Group during 1994.

Progress was also made in preparing the ad-hoc procedures to be applied in sensitive installations while the Facility Attachments of these installations are not yet in effect.

Tecnical Support

Faced with the possibility of sharing some less frequently used equipment with the IAEA, ABACC reviewed the priorities on its list of equipment and completed the acquisition of an additional set of equipment allowing it to carry out various inspections simultaneously in Brazil and Argentina.

In December 1994, the equipment available at ABACC consisted of:

Gamma Measurement

- 4 HM-4
- 5 Davidson Multichannels
- 5 Ortec Multichannels
- 2 Ge Detectors
- 8 NaI Detectors
- 6 Collimators for NaI detectors
- 2 Set of calibration sources
- 2 Sets of isotopic standards
- 3 Contamination monitors

Other equipment

- 2 Kratos load cells (5 ton.)
- 2 BHL load cells (1 ton.)
- 2 BHL load cells (0.5 ton.)
- 1 Portable load cell (1 ton.)
- 1 Portable load cell (0.5 ton.)
- 4 Plataform load cell
- 2 Ultrasonic thickness meters
- 1 Analytical balance
- 1 Cherenkov viewer device
- 40 UF_6 sample ampoules
- Various analytic standards
- Various sets of standard weights

Part of this equipment was transferred to Argentina, in order to avoid the problems arising from it being transported by the inspectors whenever an inspection is carried out in that country. This equipment is kept in an area made available to ABACC by the Argentine National Atomic Energy Commission.

Progress was also made with the study of surveillance equipment, acquisition of which will be necessary for installation in sensitive plants, and possibly also in other installations. A conceptual outline was prepared of an integrated surveillance system for enrichment plants, with the technical and economic feasibility analysis thereof under way.

During the inspections carried out in 1994, 87 samples of nuclear material were collected. Of these samples, 51 have already been analyzed, one is being analyzed, and 35 are being transferred to the corresponding laboratories.

With regard to the inter-comparison laboratory program undertaken by ABACC, in order to verify the quality of the analysis of samples from various laboratories that constitute its analytical network, the reception phase of the results was concluded, with a positive response for the analyses from 12 of the 15 laboratories invited to participate in this exercise. The coordinating group, consisting of Brazilian and Argentina specialists, which is responsible for the inter-comparison exercise, will assess the respective results.

During the inspections, 390 containment seals were placed, and the Technical Support Area of ABACC handled the verification of 190 seals removed by the inspectors.

In September, the ABACC Secretariat set up an advisory group for non-destructive analysis, with the cooperation of Brazil's National Nuclear Energy Commission, and the Argentine National Atomic Energy Commission, which made the necessary technical staff available to ABACC. The objectives of this group include a detailed analysis of the method proposed by Argentine and American experts for measuring the hold-up in gas diffusion uranium enrichment plants, as well as the possible validation of this method by ABACC, which would use it during physical inventory inspections while the plant is being operated. This group carried out an exhaustive audit of the results obtained during the development of the method, and in November carried out a series of measurements at a mock-up of the Pilcaniyeu plant. These measurements showed that the results obtained by the technical staff who developed this method could be properly reproduced. However, in order to complete the validation thereof, additional calibration and transmission verification experiments in situ, and the assessment of calculation methods are scheduled for early 1995.

LIST OF ABBREVIATIONS

AATN: Asociación Argentina de Tecnología Nuclear

ABEN: Associação Brasileira de Energia Nuclear

IAEA: International Atomic Energy Agency

CEA: Commissariat à l'Energie Atomique

CETAMA: Commission d'Etablissement des Méthodes d'Analyses

CNEA: National Atomic Energy Commission of Argentina

CNEN: National Nuclear Energy Commission of Brazil

DIQ: Design Information Questionnaire

DOE: Department of Energy, U.S.A.

ENREN: National Nuclear Regulation Agency of Argentina

EURATOM: European Atomic Energy Community

INFCIRC: International Atomic Energy Agency Information Circular

INMM: Institute of Nuclear Material Management

IPEN: Energy and Nuclear Research Institute

LOF: Locations Outside Facilities - any place where nuclear material is used or stored in quantities equal to or less than 1 Kg. effective.

MBA: Material Balance Area

OPANAL: Agency for the prohibition of nuclear weapons in Latin America and the Caribbean

SCCC: Common System for Accounting and Control of Nuclear Materials

ABACC

Financial & Administrative Activities

- Human/Financial Resources
- Statement of Accounts
- Organizational Structure of the ABACC Secretariat

Human/Financial Resources

The administrative activities providing support for the functioning of ABACC and carrying out the inspections for the control of nuclear materials progressed smoothly, according to routine, with no problems.

Outstanding among the main administrative activities carried out by the ABACC Secretariat during 1994 are the following:

- The closing of the Annual Balance Sheet for 1993, and its corresponding certification by an External Audit;
- The hiring of Dr. Lilia Crissiuma Palhares by the Secretariat, as Accounting Officer;
- The return of Dr. Marcio Costa to the Secretariat, who once again took over the position of Administrative and Finance Manager;
- Receipt of the contribution of US$ 2,514,750.00 as covered in the Secretariat budget for 1994, from the Governments of Brazil and Argentina.
- Surveys and studies were carried out on setting up a Pension Fund for ABACC staff, as stipulated in the Staff Regulations of the Secretariat. This issue will be definitively resolved during the next fiscal year (1995).

STATEMENT OF ACCOUNTS
on 31 de December de 1994
(values in US$)

1.	**REVENUES**	
	Brazilian Government Contribution	1,257,375.00
	Argentine Government Contribution	1,260,000.00
	Financial Revenues	175,472.05
	Total	**2,692,847.05**
2.	**EXPENSES**	
	Payroll	1,078,161.78
	Temporary Assistance	34,738.37
	Travels & Accommodation	736,536.43
	Technical Support	64,583.14
	Officce & Vehicles	284,799.56
	Financial Expenses	38,024.66
	General	58,782.26
	Total	**2,295,626.20**
3.	**INVESTMENTS**	
	Technical Support	438,269.64
	Office & Vehicles	160,543.16
	General	659.34
	Total	**599,472.14**
4.	**LETTERS OF CREDIT & ADVANCES FOR PURCHASING EQUIPMENT**	**53,542.60**
5.	**YEAR-END BALANCE**	**397,220.85**

Organizational Structure of ABACC's Secretariat

Jorge Coll
Secretary

Carlos Feu Alvim
Deputy Secretary

Technical Area

Rubén Nicolás
Accounting

Lilia Palhares
Accounting

Olga Mafra
Operations

Horácio Gonzales
Operations

Marco Marzo
Planning & Evaluation

Alfredo Biaggio
Planning & Evaluation

Gevaldo Almeida
Technical Support

Administrative Area

Marcio Costa
Administrative & Finance

Ana Claudia Raffo
Institutional Relations

Consultant Inspectors

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Camilo Eduardo Paganini
Eduardo Diaz
Eduardo Francisco Santos
Fernando da Costa Magalhães
Gilberto Gomes de Andrade
Laércio Antonio Vinhas
Osvaldo Alberto Cristalini

Inspectors

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Alicia Jimenez Davila
Analia Delia Saavedra
Bertha Floh de Araujo
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Carlos Daniel Llacer
Celia Christiniani P. Portoghese
Claudio Luis de Oliveira
Cyro Teiti Enokihara
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Gevaldo Lisboa de Almeida
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Ivan Santos
João Manuel Losada Moreira
Jorge Alberto Chagaray
Jorge Antonio Coll
Jorge Omar Remedi
Jorge Oscar Gomez
José Araujo
José Augusto Perrota
José Claudio Pedrosa
José Glaucio Motta Garone
José Henrique B. Bezerra
José Henrique Buchmann
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Rubén Osvaldo Nicolás
Sergio Gavazza
Silvio Gonçalves de Almeida
Sonia Fernandes Moreno
Sonia Valeria Gonçalves
Vitorio Emilio da S. Nunes
Walter Pereira

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Maria Isabel Reyes Gonzalez
Teresinha Curvelo
Maria Dilma Marcolan Cosetti
Mauro Souza de Jesus

Representative in Argentina

Camilo Eduardo Paganini

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