

Relatório Anual Informe Anual Annual Report

ABACC

Annual Report

ODILON MARCUZZO DO CANTO - BRAZILIAN SECRETARY

Message from the Secretary

In compliance with the provisions made in article XI, item i, of the Agreement between the Federal Republic of Brazil and the Argentine Republic for the exclusively peaceful uses of nuclear energy and with those in article 16, item h, of the Regulation of the ABACC's Secretariat, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials - ABACC - is pleased to present its 2009 ANNUAL REPORT.

This report has been prepared within the same format as in the previous years, organized by areas of activities. We expect that, this way, it will be easier to read and a clear understanding of the described activities will be guaranteed.

In compliance with its mission - its main objective being the application of safeguards in all the nuclear facilities and for all the nuclear materials in Brazil and Argentina, ABACC carried out 107 inspections: 61 of them in Argentine facilities and 46 in Brazilian facilities. As a result of this effort, the Agency is pleased, once again, to guarantee for the international community that, in 2009, all the nuclear materials and other elements under safeguards, both in Brazil and in Argentina, were used for exclusively peaceful purposes and accounted appropriately.

After completion of its tasks in this period, the ABACC did not find any signs of noncompliance with the commitments made by both countries.

The Secretariat states with certainty that such results were only possible due to the dedication and professionalism of its officials, assistants and team of inspectors, to whom a special gratitude is expressed herewith.

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Furthermore, the Secretariat states its acknowledgment and thankfulness to the members of the Commission, whose actions and guidance have greatly facilitated a good performance and the execution of the tasks. Special recognition needs to be made for the members of the Argentine delegation who left the Commission in 2009 - Ambassador Elsa Kelly, Dr. Raúl Racana and Counselor Sebastián Sayús - who performed their functions with special dedication and professionalism, making significant contributions to this Agency. All of them deserve our acknowledgment and our deepest appreciation. The Secretariat of ABACC and its teams of officials and inspectors wish them the best of success in the performance of their new activities.

On the other hand, we convey our welcome to Minister Gustavo Ainchil, to Secretary Lorena Capra, to Dr. Francisco Spano, to Lic. Elena Maceiras and to Lic. Gabriel Terigi, who joined the Argentine representation during this year. We are certain that all of them will be contributing relevantly to a good performance of the Agency.

Its permanent search for the improvement of its team and its concern for maintaining itself in the state of the art regarding technologies and innovations applicable in safeguards have led to the international acknowledgment of ABACC as an example of bi-national efforts towards mutual confidence and transparency in the use of nuclear energy for peaceful purposes.

An example of this effort is the decision made to monitor the weighing system in the feeding and withdrawal stations of the Planta Comercial de Enriquecimento of the Indústrias Nucleares do Brasil in Resende. This system will allow both ABACC and the International Atomic Energy Agency - IAEA - to verify, independently, the mass data provided by the operator, which represents a technological innovation in the safeguards approach. This procedure was agreed upon by Brazil, the IAEA and ABACC, and will start to be applied in 2010. This system is first-in-its-type in the world and demonstrates the willingness by both, Brazil and Argentina, for the application of new techniques aimed at the control of nuclear materials under safeguards.

Concern regarding the qualification of its personnel was a permanent objective during 2009. Several training courses were given, especially considering the number of new Argentine and Brazilian inspectors enrolled in ABACC's team in 2008.

During 2009, the Agency participated in several international forums, either presenting technical documents or making presentations for the dissemination of its activities. To be noted are its participation in the 53rd General Conference of the IAEA and, as a guest, in the 21st Meeting of the Consulting Group of the Nuclear Suppliers Group, during which a presentation was made concerning the structure of ABACC and its role in managing the SCCC - Common System for Accounting and Control of Nuclear Materials - in Brazil and Argentina.

Because of its importance, we highlight the coordination meetings held with the Parties of the Quadripartite Agreement, essential forum for a good management of this Agreement and of the SCCC.

The Secretariat hopes that the contents of this report will give a clear understanding of the activities developed by ABACC during 2009 and will demonstrate that the Agency is complying with its mission both efficiently and effectively.

Odilon Marcuzzo do Canto SECRETARY

ABACC

JOINT ACTIVITY ABACC - IAEA

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SAMPLING CYLINDER FOR UF₆

Introduction

The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials - ABACC, created under the Agreement between Brazil and Argentina for the Exclusively Peaceful Use of Nuclear Energy - Bilateral Agreement, undersigned on the 18th July 1991, is aimed at the administration and application of the Common System for Accounting and Control of Nuclear Materials - SCCC. The purpose of this system is to verify, on the basis of the guidelines established in the Bilateral Agreement, that all the nuclear materials and facilities, related to the nuclear activities, carried out in the territories or under the jurisdiction of Brazil and Argentina, are being used exclusively for peaceful purposes.

Additionally, as a signatory of the Quadripartite Agreement for the Application of Safeguards,

undersigned by Argentina, Brazil and the International Atomic Energy Agency, ABACC is responsible for the implementation, coordination and the application of this agreement since its enforcement in March 1994.

The Liaison Committee, in which participates both the Secretariat of ABACC, the Secretariat of the IAEA and the national authorities of Brazil and Argentine, is the highest level board of the Quadripartite Agreement. In the meetings of this Committee issues that are affecting the political and technical implementation of the Agreement are discussed and decided. As and advisory board of the Liaison Committee, there is the Liaison Subcommittee, in which members of all parties of the Agreement participate. This group discusses the technical

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issues, either requested by the Liaison Committee itself or by one of the Parties.

Both the IAEA and the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean – OPANAL, considered the Quadripartite Agreement as valid in order to comply with the requirements of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean – Tlatelolco Treaty, of which both Argentina and Brazil are signatories. Furthermore, the IAEA considered the Quadripartite Agreement as valid for complying with the requirements for the application of safeguards as established in the Non-Proliferation Treaty – NPT, to which Argentina adhered in 1995 and Brazil did in 1997.

In order to verify the inventory of nuclear materials, ABACC performs regular inspections in the facilities in Argentina and Brazil. These inspections are carried out jointly with the IAEA, although the evaluations and conclusions concerning the results obtained are independent.

The inspectors of ABACC play a fundamental role in the safeguards inspections: they are the ones responsible for the verification of nuclear materials in the facilities and of their application in the declared purposes. Currently, the team of inspectors of ABACC has 47 Brazilian inspectors and 53 Argentine inspectors.

With the guarantee provided to the countries, on the basis of the results obtained and of the evaluations performed, that nuclear materials are not being diverted to non-authorized applications and that they are being used exclusively for peaceful purposes, ABACC has become essential in the validation of the transparency of the nuclear activities carried out in Argentina and Brazil and for ratifying, for the international community the permanent commitment of these countries favoring nonproliferation and nuclear disarmament. In carrying out its mission, ABACC has the permanent cooperation and support provided by the national authorities of both countries.

ABACC, in its organizational structure, has a Board of Directors, the so-called "Commission" and an Executive Secretariat. The Commission has two Argentine representatives and two Brazilian representatives, appointed by their governments.

The structure of the Secretariat is shared by two secretaries, one from Brazil and the other from Argentina, who alternate the positions of Secretary and Deputy Secretary annually, and by eight technical officials, one of the Brazilian nationality and one of the Argentine nationality, in each one of the following areas: Planning, Operations, Accounting and Technical Support. Besides, there is an Argentine official for Finance and Administration, and a Brazilian official for Institutional Relations.

For its technical-administrative activities, the Secretariat is staffed by a team of ten people, two of which are located in Buenos Aires.

ABACC's Headquarters are located in Rio de Janeiro. In Buenos Aires, there is an office that provides the technical support for the safeguards inspections missions.

For further information, please visit ABACC's website: http://www.abacc.org

METAL SEALS

Activities of the Commission

The Commission of the Brazilian Argentine Agency for Accounting and Control of Nuclear Materials, the ruling body of the Agency, has two representatives of the Argentine government and two representatives of the Brazilian government.

This year, the representatives of the Argentine Government were Minister Gustavo Eduardo Ainchil and Dr. Francisco Spano. The representatives of the Brazilian Government were Minister Carlos Sérgio Sobral Duarte and Dr. Odair Dias Gonçalves.

The Commission held three meetings during the year. Among the issues discussed during

these meetings, one to be noticed is the analysis of the new safeguards measures proposed for the uranium conversion plants.

Among the administrative topics, it is important to highlight that the Commission approved the Accounting Report for the year 2008 and the Work Plan for 2010.

The Argentine and Brazilian Secretaries alternate their positions annually. In the last meeting of the year, the Secretariat was transferred to the Argentine Secretary, Dr. Antonio Abel Oliveira, while Dr. Odilon Marcuzzo do Canto became the Deputy Secretary.



APPLYING CONTAINMENT IN A NUCLEAR INSTALLATION

Application of Safeguards

During 2009, the sectors of ABACC carried out the planned activities required for the performance and evaluation of the inspections, so as to comply with its mission of applying nuclear safeguards both effectively and efficiently. The databases that support the safeguards activities were updated and the instruments and equipment used by the inspectors were maintained, tested and calibrated.

Inspections

ABACC performed routine and ad-hoc inspections in coordination with the International Atomic Energy Agency and with the support of the national authorities. The table below shows the result of the work performed by ABACC during 2009.

Type of inspection	Argentina	Brazil	Total
Physical Inventory Verification	28	17	45
Interim inspections	30	19	49
Unannounced inspections	0	8	8
Verification of the Design Information Questionnaire	3	2	5
Total inspections	61	46	107
Inspection effort (by inspectors/day)	277	157	434
Availability (by inspectors/day)	531	377	908

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Main activities in Argentina

In 2009 is worth mentioning the Short-Notice Random Inspections carried out at the Fábrica de Elementos Combustibles Nucleares of the Combustibles Nucleares Argentinos S.A.(CONUAR). In accordance with the procedures established, there were inspections trigged by ABACC and by the IAEA. A Physical Inventory Verification inspection was also carried out in this facility.

ABACC and the IAEA performed, jointly, inspections at the Complejo Fabril Córdoba, which included physical inventory verifications and scrap campaigns. In addition to these, ABACC - without the participation of the IAEA - carried out inspections for the verification of the scraps campaigns.

The first Physical Inventory Verification inspection at the Central Nuclear Atucha II was performed along with an inspection for the Design Information Verification in order to follow up the schedule of the construction work and check the conformity based on the Design Information Questionnaire.

At the Central Nuclear Embalse, transfer campaigns of spent fuel elements from the storage pool to the silos were performed, which implied an additional effort in the inspection work in Argentina.

A Design Information Verification inspection was performed at the Planta de Enriquecimiento de Uranio in Pilcaniyeu, in which the new Design Information Questionnaire received from the Autoridad Regulatoria Nuclear was used as a reference. Argentina has separated the area used for the development of isotopic separation elements from the production area. This modification created a new facility and a new division of the material balance area.

Main activities in Brazil

Of notice, in 2009, it was the implementation of the Short-Notice Random Inspections at the Fábrica de Combustível Nuclear – Reconversão e Pastilhas/Componentes e Montagem of the Indústrias Nucleares do Brasil (INB). In accordance with the procedures established, there were inspections trigged by ABACC and by the IAEA. In this installation it was also carried out a Physical Inventory Verification inspection.

Unannounced inspections were carried out at the enrichment plants of the Centro Tecnológico da Marinha em São Paulo and at the Fábrica de Combustível Nuclear – Enriquecimento of the Indústrias Nucleares do Brasil.

At the Central Nuclear Almirante Álvaro Alberto Unit 1 - Angra 1, during the change of the steam generators, inspections were performed. Since this is a special situation regarding safeguards, additional containment and surveillance tools were applied, which were previously agreed by the national authority and the operator.

At the Central Nuclear Almirante Álvaro Alberto Unit 2 - Angra 2, the server of the surveillance system in the containment sector of the reactor was transferred to an external area. By means of this transfer, the server is now located in a more appropriate place for its operation, both concerning the temperature and the radiation protection, hence facilitating access to the unit during the inspections.

A Design Information Verification inspection was carried out at the Unidade de Produção de Hexafluoreto de Urânio of the Centro Tecnológico da Marinha em São Paulo.

Support to the inspection activities

The database of accounting records was updated regularly on the basis of the accounting reports received from Argentina and Brazil throughout the year. After their comparison with the data collected during the inspections, the accounting situation of their nuclear material balance area were informed, on a monthly basis, to both national authorities and to the IAEA.

ABACC performed technical support missions for preventive and corrective maintenance purposes and for the required modernization of the safeguards systems, instruments and equipment in the facilities of both countries. Among these facilities we can mention the work performed at the Central Nuclear Atucha I, at the Central Nuclear Embalse and at the Central Nuclear Almirante Álvaro Alberto Units 1 and 2, as well as in the enrichment facilities of the Centro Experimental Aramar and of the Fábrica de Combustível Nuclear – Enriquecimento of the Indústrias Nucleares do Brasil.

Several inspection procedures were developed or reviewed, among which the procedures for the unannounced inspections shall be mentioned. Additionally, operating procedures and facility attachments were developed and/or updated among those the ones used by ABACC's inspectors in the operation of systems and equipment for gamma measurements, for the calculation of uranium enrichment, of the surveillance systems, of the imaging review system and of the electrooptical seals.

With regard to the data processing support, the computer network in ABACC's headquarters in Rio de Janeiro and at the office in Buenos Aires were restructured. This task was aimed at increasing efficiency in data management and security in its use.

In order to assess the operating and calibration status of the gamma spectrometry measuring

equipment used jointly with the IAEA, work continued to be done in the fabrication of tertiary calibration patterns to be used during the inspections. Plans have been made for the fabrication of these patterns, with different isotopic uranium compositions, which will be kept at the most relevant facilities. Also, inspectors will be able to carry some patterns during their missions to facilities where such patterns will not be available on a permanent basis.

Issues regarding the application of safeguards

ALTERNATIVES FOR THE VERIFICATION OF NUCLEAR MATERIALS IN CONVERSION PLANTS

On the basis of the decisions made at the meetings of the Liaison Committee and the discussions held at the Liaison Subcommittee, within the framework of the Quadripartite Agreement, ABACC, IAEA, Brazil and Argentina analysed safeguards actions with a view to improve the verification of nuclear materials and the application of the Short-Notice Random Inspections regime in conversion plants.

Argentina, with a conversion plant in operation at the Complejo Fabril Córdoba, stated its formal decision to keep using the UO_2 declaration as the starting point for submitting material to safeguards and to provide operational data of the nuclear purity of the uranyl nitrate at a specific stage of the process. Argentina did also express its acceptance with a complete Design Information Verification throughout the whole process of its conversion facility.

The issue will continue to be discussed during 2010.

APPLICATION OF SAFEGUARDS IN URANIUM ENRICHMENT FACILITIES

ABACC and the IAEA applied special procedures in unannounced inspections performed at the centrifuge cascades that are being commissioned at the Fábrica de Combustível

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Nuclear – Enriquecimento of the Indústrias Nucleares do Brasil. These procedures are applied for specific periods during the initial operation tests. ABACC and the IAEA are currently preparing a standard procedure, with the consensus of the national authority and of the operator for future commissioning.

ABACC has been taking actions, along with the Comissão Nacional de Energia Nuclear, IAEA and the operator, for the safeguards measures at the Fábrica de Combustível Nuclear – Enriquecimento of the Indústrias Nucleares do Brasil, as foreseen in the negotiated safeguards approach, to be implemented in full. Among the most significant issues negotiated, the development of the system for imaging verification in the cascades is worth mentioning.

The IAEA has requested significant changes in the safeguards approach of the Laboratório de Desenvolvimento de Elementos de Separação Isotópica of the Centro Tecnológico da Marinha em São Paulo, based on the new requirements of the IAEA for enrichment plants and laboratories. ABACC organized a technical visit to this facility and a meeting among the IAEA, the Comissão Nacional de Energia Nuclear and the operator to analyze such request. As a result of the debate, the IAEA has sent a proposal reviewing the safeguards approach. After reviewing the proposal based on the legal issues of the Quadripartite Agreement, ABACC sent it to the Brazilian national authority for analysis.

TRANSMISSION OF THE STATE OF HEALTH OF SAFEGUARDS EQUIPMENT

Since 2006, ABACC has been negotiating with the national authorities of Brasil and Argentina proposals for the application of the technique for the transmission of the state of health of safeguards equipment in some of the surveillance systems that are permanently in operation in the facilities of both countries, regarding the safety requirements established by both countries. During the technical meetings held between ABACC and the IAEA, it was discussed the technical background to fulfil the safety requirements and also to take the advantage of the IAEA's experience in the installation of these systems. The proposal presented will allow a random supply to the countries of the data that prove the security of the system and of the data actually transmitted.

In order to comply with the authentication requirements related to the Common Use of Equipment between ABACC and the IAEA, both agencies agreed that, when access to the systems is made, a communication procedure between them will be applied.

COORDINATION OF INSPECTION ACTIVITIES BETWEEN ABACC AND THE IAEA

The video conference system installed for the communication between ABACC and the IAEA is operational. It is being used, mainly, for the pre-inspection meetings, thus optimizing the time of the inspectors and for the coordination, between the ABACC and IAEA officials, of matters requiring immediate actions during the inspections. The system is also being used for video conferences with institutions with which ABACC has cooperation agreements or performs joint work.

During 2009, negotiations regarding the procedures of the Common Use of Equipment by the ABACC and the IAEA continued, and some of them were approved. Both agencies will go on discussing the requirements established in the IAEA's Policy Paper 20.

Main projects developed

SAFEGUARDS SYSTEMS TO BE APPLIED AT THE CENTRAL NUCLEAR ATUCHA II

The Autoridad Regulatoria Nuclear, the operator, ABACC and the IAEA exchanged information and had technical visits and meetings to prepare the project of the safeguards systems to be applied at the Central Nuclear Atucha II.

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fuel storage pools.

Part of the equipment needed for the startup of the systems has been purchased and the tests of the assembly of the detectors of the spent fuel elements counter have been performed successfully.

UNATTENDED SYSTEM FOR THE TRANSFER OF SPENT FUEL ELEMENTS AT THE CENTRAL NUCLEAR EMBALSE

ABACC, the IAEA, the ARN and the operator of the Central Nuclear Embalse are developing an unattended system for the follow up of the campaigns for the transfer of spent fuel elements from the reactor pool to the silos. The unattended system agreed among the parties is split into 3 subsystems which responsibility concerning their supply and maintenance is as follows:

- Transfer from the pool to the welding cell, IAEA,
- Transfer from the welding cell to the silos, ABACC, and
- Final storage in the silos, IAEA.

The project is completed and the equipment needed for the installation are being purchased.

The part of the project of the unattended system under ABACC's responsibility includes the installation of the neutron detector and of the surveillance camera in the vehicle to be used for the transport between the reactor building and the storage silos. Concerning the neutron detector, developed internally by the IAEA, ABACC requested the Agency five detectors, on loan, until its validation by the commercial manufacturer is completed.

SYSTEM FOR MASS VERIFICATION OF UF₆ CYLINDERS AT INDÚSTRIAS NUCLEARES DO BRASIL

The process for contracting the installation service for the mass verification system to be coupled to the loading cells of the feed and withdrawal station of the Fábrica de Combustível Nuclear of Indústrias Nucleares do Brasil has started. The system will allow the independent verification of the data provided by the operator by both, ABACC and the IAEA. A period of six months has been foreseen for its implementation and it should be tested during 2010. Its installation at the enrichment plants introduces a new technology in the safeguards approaches.

SURVEILLANCE SYSTEM WITH A SHORT INTERVAL IMAGE TAKING

ABACC and the IAEA have been evaluating alternative surveillance systems that comply with the requirement of a short interval image taking, so as to replace the EURATOM Multi-Camera Optical Surveillance System installed in enrichment plants and whose production and maintenance have been discontinued by the manufacturer.

Two lines of action are being undertaken:

The first, managed by ABACC, is based on the development of a surveillance system using components available in the market. This system, named Secure Video Surveillance System, is being developed jointly with the Sandia National Laboratories of the United States Department of Energy. The first prototype is expected to be tested in the field in 2010 and ABACC has been informing the IAEA, on a permanent basis, the progress in the development of this system.

The second line of action, suggested by the IAEA, is the use of the camera Hawk Digital Imaging System. Although it was

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not developed specifically for application in safeguards, this camera is suitable for the application in enrichment plants. ABACC is currently carrying out performance tests with the last version of this system.

NEW IMAGING SURVEILLANCE SYSTEM WITH GUARANTEE OF AUTHENTICATION

The IAEA has been developing a new surveillance system, with cameras and an image storage system, named Next Generation Surveillance System, whose technical features guarantee that electronic circuits boards will not be altered, in addition to have an authentication system with higher security levels than the surveillance systems currently in use. The technological trend is to start using this new system progressively, replacing the systems now in use. ABACC will test and evaluate the new system, which should be available by mid 2010.

NEW METHODOLOGIES AND EQUIPMENT

ABACC purchased a lanthanum bromide detector and performed studies concerning the feasibility and the advantages of using this type of detectors for the verification of nuclear materials by gamma spectrometry. Although this type of detectors has not been validated for this purpose, it evidences technical advantages when compared with those currently in use.

The IAEA sent seals of the Electronic Optical Sealing System type to ABACC for performing tests to evaluate its use in inspections. This type of seal has a more advanced validation system than those of the VACOSS type and is designed for their joint use by the safeguards agencies. The tests were successful and ABACC is now purchasing the required number of them for their joint use with the IAEA. ABACC completed the evaluation of the test results concerning the UF_6 sampling method named "ABACC-Cristallini Method", which is based on the absorption capacity of the aluminum oxide pellets. This method replaces with advantages (lower cost and a smaller number of scraps) the traditional sampling technique with ASTM-type ampoules. ABACC has been following up of the validation of the method, managed by the IAEA along with independent laboratories.

In order to improve effectiveness and efficiency in the inspections at the Depósito Central de Material Fisionable Especial Irradiado in Ezeiza, Buenos Aires, ABACC and the IAEA, with the co-operation of the Autoridad Regulatoria Nuclear, are developing a verification system based on gamma ray detection, to verify the nuclear materials in this facility. This new system will optimize the inspection efforts in the transfer of irradiated materials and filters resulting from the production of molybdenum.

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SURVEILLANCE SYSTEM FOR SAFEGUARDS

Management of the Quadripartite Agreement and the **SCCC**

Management of the Quadripartite Agreement and of the Common System for Accounting and Control of Nuclear Materials

COORDINATION MEETINGS ABACC – NATIONAL AUTHORITIES

ABACC and the national authorities of Argentina and Brasil, met several times during 2009. The most outstanding issues discussed were as follows:

Specific topics from Argentina:

- Review of the accounting procedures adopted by the Autoridad Regulatoria Nuclear/Operator for the delivery of accounting data to ABACC and IAEA inspectors. The reviewed procedures will facilitate the record auditing activities.
- Performance and preventive maintenance of the safeguards equipment owned by ABACC and the IAEA.
- Analysis and review of the following safeguards approaches: of the Depósito Central de Material Fisionable Especial Irradiado; of the Short-Notice Random

Inspections at the Central Nuclear Embalse during the campaigns for the transfer of spent fuel to the silos, and of the uranium enrichment plants.

Analysis of the planning and schedule of inspections as well as the training courses for 2010.

Specific topics from Brazil:

- Analysis and review of the safeguard approaches to be applied during the commissioning and environmental sampling of the new cascades in the enrichment plants;
- Analysis of the planning and schedule of inspections as well as of the training courses for 2010.

Coordination meetings ABACC - IAEA

The 24th Coordination Meeting between ABACC and the IAEA was held in the occasion of the IAEA's General Conference in Vienna. This meeting had the participation of the IAEA's official in charge of safeguards for Argentina and Brazil.

The following topics, related to the application of safeguards as foreseen in the Common System for Accounting and Control of Nuclear Materials, are to be noted:

- IAEA proposal regarding the application of safeguards measures that deal with issues directly related to the legal base of the Quadripartite Agreement;
- IAEA proposal concerning activities to be carried out during the Design Information Verification inspections;
- Application of a new procedure for the service rendered by ABACC to the IAEA, regarding the transport of samples and equipment units among facilities and

their release by the countries' customs services.

In addition to the coordination meeting, technical meetings were held to deal with operational issues and issues regarding the application of the Quadripartite Agreement.

ABACC and the IAEA held three-party meetings with the Comissão Nacional de Energia Nuclear and with the Autoridad Regulatoria Nuclear in order to review and analyze the Design Information Questionnaires and their Facility Attachments. In these meetings, schedules and targets dates were established for the update of the Design Information Questionnaires and the analysis of the new Facility Attachments, so to enforce them, as determined by the board of the 10th meeting of the Liaison Committee of the Quadripartite Agreement to ABACC and the IAEA.

STATUS OF THE DESIGN INFORMATION QUESTIONNAIRES AND OF THE FACILITY ATTACHMENTS

With regard to the reviews of the Design Information Questionnaires required by ABACC and the IAEA, the following actions were taken during this year:

	Argentina	Brazil
Review or update of the Design Information Questionnaires	24	9
Preparation of new Design Information Questionnaires	2	1

The reviews or updates of the Design Information Questionnaires of the facilities are carried out whenever there is a significant modification in the installation project or if the previously reported information is updated.

The Comissão Nacional de Energia Nuclear sent to ABACC the preliminary information of the Design Information Questionnaire of the Central Nuclear Almirante Álvaro Alberto -Angra-3 and the Autoridad Regulatoria Nuclear

With regard to the application of the facility attachments of the Brazilian and Argentine facilities, the situation, at the end of the year, was as follows:

	Argentina	Brazil
In force	27	12
Under negotiation	9	9
Under development	2	4

The expression "in force" refers to the facility attachment that were already approved by ABACC, by the IAEA and by the corresponding State Party; "Under negotiation" refers to the preliminary version of the facility attachment that is still to be approved by ABACC, by the IAEA and by the corresponding State Party. The expression "Under developmen" refers to the facility attachment whose preliminary version is being prepared by the IAEA or ABACC for presentation to the corresponding State Party.

During this period, the Commission of ABACC approved the reviews of two facility attachment that are already in force.

PRESENTATION AT THE 2009 INMM CONFERENCE

Participation in Foreign **Events**

ABACC is being invited to participate in national and international events in order to present the evolution of the safeguards activities in which it participates. These invitations demonstrate the recognition of the technical and administrative capability of ABACC's Secretariat.

While participating in these events, ABACC has several objectives: to present the technological developments obtained with the cooperation of the national authorities and with other institutions, such as the United States Department of Energy and EURATOM; to keep updated regarding new equipment, methodologies and technologies applied to safeguards and to interact with internationally recognized pairs and specialists working in the area.

The relevant forums in which officials of ABACC participate are the annual conference of the Institute of Nuclear Material Management – INMM and the meetings of the European Safeguards Research and Development Association – ESARDA. In these forums ABACC presents papers and participates in discussion panels.

As in the previous years, ABACC' Secretary participated in the General Conference of the International Atomic Energy Agency. The Secretary, in his speech, highlighted the commitment of the Argentine and Brazilian governments in restarting their national nuclear programs, and the importance of cooperation between ABACC and the IAEA for the success of the Common System for Accounting and Control of Nuclear Materials, the SCCC.

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In addition to these events, ABACC was invited by the United States Department of Energy to participate, as lecturer, in the International Safeguards Fellowship for Post-Graduate Students presenting the activities and the role of ABACC 'S inspector in the inspections; in the Second International Meeting on Next Generation Safeguards and in the International Workshop on Human Capital Development in Nuclear Safeguards, sponsored by the European Community.

In this year, ABACC received the special invitation to participate at the 21st meeting of the Consulting Group of the Nuclear Suppliers Group, which was held in Vienna from 30th of September to October 1st. In his presentation, ABACC's Secretary mentioned the activities performed by the Agency and put emphasis on the Common System of Accounting and Control of Nuclear Materials as an essential tool for the verification of the nuclear activities in Argentina and Brazil.

COURSE FOR ABACC AND IAEA INSPECTORS

Strengthening technical **Capability**

In order to maintain and improve the training of the inspectors and officials, in 2009 ABACC performed several training courses in Buenos Aires and Rio de Janeiro.

For those who had just enrolled ABACC's team of inspectors, a program of courses was offered to satisfy their initial needs and leveling their knowledge. Among them, we can mention the "Course on Operation" and the course on "Non-destructive Analysis Techniques".

Regular courses such as "Containment and Surveillance", "Use of the Neutron Collar" and "Use of the Software for the Joint Auditing of Records" were offered.

In the courses, emphasis is put also on the practical issues. For that, during this year -

in addition to its own facilities-, ABACC used laboratories and facilities of the following institutions:

- Autoridad Regulatoria Nuclear,
- Fabrica de Elementos Combustibles of CONUAR,
- Laboratorio de Salvaguardas of the Comissão Nacional de Energia Nuclear, and
- Indústrias Nucleares do Brasil.

In addition to the participation of ABACC's officials and of Brazilian and Argentine specialists, the participation of foreign instructors is stimulated, considering the permanent evolution of the concepts applicable

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to nuclear safeguards and of the technologies in use.

This year, we have to mention the participation of specialists from the Canadian Nuclear Safety Commission, from the United States Department of Energy and from the IAEA.

By the end of this year, five courses were offered in Argentina and Brazil. The table shows all the courses offered in the period.

Name	Place	Number of trained inspectors
Course on Operations	Rio de Janeiro	16
Course on the Use	Resende	10
of the Neutron Collar	Buenos Aires	10
Course on the Use of the Software for	Resende	10
the Joint Audit of Records – SJAR	Buenos Aires	10
Workshop on the VIFM system	Rio de Janeiro	9
Course on Inspection Proce- dures in Brazilian Enrichment Plants	Rio de Janeiro and Resende	10 (ABACC) 3 (IAEA)

TECHNICAL COOPERATION ACTIVITY WITH THE US DEPARTMENT OF ENERGY

Technical Cooperation

Cooperation with EURATOM

ABACC and EURATOM are developing cooperation projects for the application of more modern technologies, as is the case of the 3-D laser for the verification of design information and the use of ultrasonic seals.

Cooperation with the United States Department of Energy

The following projects are under development:

Action Sheet 14

Cooperation on Non-destructive Assay / Enrichment Measurements Systems

OBJECTIVE: Evaluation of the software

programs currently in use by ABACC for the isotopic determination in the non-destructive analysis and in the provision of tools for their improvement, with a view to expand their applicability in the field and guaranteeing the high level of quality and reliability of the results obtained by the inspectors.

Action Sheet 15

Development of Environmental Sampling Capability in Support of the Regional Agreement between Argentina and Brazil

OBJECTIVE: Training Brazilian and Argentine laboratories for the analysis of environmental samples gathered during the inspections.

In 2009, laboratories in both countries were visited for two purposes: to disseminate the technique for analysis of environmental sam-

ples used in the Laboratório de Salvaguardas of the Comissão Nacional de Energia Nuclear, which reached the goals established in the previous stage of the project, and to promote the development of the methodology for the evaluation of environmental analyses of the bulk type. It must be noted that this project was quite important for the qualification of this laboratory by the IAEA and to inegrate it to the IAEA Network of Analytical Laboratories, which analyses environmental samples for safeguards purposes.

Action Sheet 16

Cooperation on Training

OBJECTIVE: Cooperation in the improvement of the expertise of ABACC's inspectors and officials, as well as of Brazilian and Argentine specialists, in order to strengthen ABACC's technical capacity.

Action Sheet 17

Cooperation on Non-destructive Analysis Measurement Systems

OBJECTIVE: Evaluation, development and testing of new systems and instruments to be used in non-destructive tests of nuclear materials required for the safeguards activities performed by ABACC in the Brazilian and Argentine facilities.

Action Sheet 18

Development of Fast-PTI Surveillance Equipment

OBJECTIVE: Evaluation, design, development, assembly and testing of a new digital surveillance system to capture images in the least time during the period in which unannounced inspections are performed, or during equipment maintenance.

Action Sheet 19

Investigation of ${\rm UF_6}$ Cylinder Tracking Technologies for International Safeguards Applications

OBJECTIVE: Field testing and evaluation of the use of a prototype system that is under development by the United States Department of Energy for tracing UF_6 cylinders with a view to its use in international safeguards applications.

Action Sheet 20

Investigation of Combined Measurements with Three-Dimensional Design Information Verification System and Gamma-Ray Imaging Systems for International Safeguards Applications

OBJECTIVE: Re-evaluation of the technique combining 3-D laser with gamma ray measurements in order to verify the presence of nuclear materials in pipelines and fittings within the facilities. ABACC, EURATOM - through its Joint Research Centre - and the Oak Ridge National Laboratory participate in this project.

Action Sheet 21

Laboratory Quality Assurance Through Analytical Standards and Samples Exchange Programs

OBJECTIVE: Maintenance of the quality assurance and quality control program currently used by ABACC, consisting on the preparation and characterization of analytical patterns and other samples of nuclear materials, done by the New Brunswick Laboratory and distributed to the analytical network laboratories that works with ABACC, so as to carry out an intercomparison test of the results obtained. MATERIAL SAMPLES

Institucional Activities

In the month of January, ABACC was visited by a delegation of the Nuclear Non-proliferation Science & Technology Center of the Japan Atomic Energy Agency (JAEA). The director and two officials participated in the visit. The Secretary of ABACC made a presentation explaining the organization and the activities developed by the Agency to accomplish the Common System for Accounting and Control of Nuclear Materials. Following this presentation, the director of JAEA presented the Japanese nuclear system, highlighting the role of the organization in the framework of the Japanese nuclear system. The delegation also visited Angra 1 e 2 Power Plants.

In may, the secretary of ABACC participated in the Latin American Regional Meeting of the International Commission on Nuclear Non-Proliferation and Disarmament (ICNND) in Chile. This meeting was of utmost importance to the nuclear international scenario, taking into consideration that the 2010 NPT Review Conference will take place next may. Ex-head of Governments, ministers, military strategists and disarmament specialists were present.

A delegation of the Corporación Andina de Fomento visited ABACC in September in order to know better the actions in course by the different actors in the region regarding the development and sustainable production of nuclear energy.

Among the cooperation agreements to promote nuclear energy established by ABACC with organizations of the nuclear sector, the cyber area of the "2009 International Nuclear Atlantic Conference" was supported by ABACC. Folders and promotional material

In November, the director in charge of the strategic matters and the head officer for Latin America of the French Ministère de la Défense – Délégation aux Affairs Stratégiques visited ABACC and were quite interested in the work developed by ABACC in Argentina and Brasil and the background of the inspectors that work for the Agency.

In order to promote the role and activities developed by ABACC, photographic panels and folders, in Portuguese, Spanish and English were produced and distributed in all events that the secretaries and officials of ABACC participated during the year.

Annual report 2009



SURVEILLANCE CAMERA

Administrative and financial **Activities**

Once more, during 2009, the administration of the financial resources of the Agency showed satisfactory results that did not evidence any significant deviations from those foreseen in the budget approved for the fiscal year.

Fulfilling the operational needs of the Agency demanded approximately 90% of the budget approved by the Commission. The disbursements for expenditures were practically equivalent to those foreseen and, for operational reasons related to the application of safeguards, approximately 50% of the budgeted investments in capital goods had to be postponed for the next year.

Once more, emphasis must be made on the impact caused by the decrease of the rate of exchange between the US dollar and the Brazilian currency, the Real - which amounted to approximately 30%.

In an attempt to neutralize the purchasing power of the US dollar, the currency in which ABACC's budget is expressed, the sector applied all the actions at hand in order to optimize the use of the Agency's resources.

Finally, we must highlight the permanent supervision of the Secretaries on the administrative and financial tasks, the provision of information of the results to the Commission on a quarterly basis and the favorable results of the audit performed by an external specialized and prestigious company concerning the Agency's accounting, financial operations, internal controls and compliance with the administrative regulations in force. VEHICLE FOR TRANSPORT OF SPENT FUEL ELEMENTS

Outlook for 2010

The following are the most outstanding nonroutine tasks to be performed by ABACC during 2010:

- Continuing the installation of the unattended system for the transfer of spent fuel elements to their dry storage in the silos at the Central Nuclear Embalse.
- Starting the negotiations of the safeguards approach for the land reactor prototype, LABGEN, under construction at the Centro Tecnológico da Marinha em São Paulo, in Aramar. This is a unique facility in so far as safeguards are concerned and it will mean both a challenge and the need for specific technical training for ABACC.
- Negotiating improvements in the safeguards approach to be applied at the Planta de Conversión a UO₂ in Cordoba

and, in Brazil, starting the discussions of the safeguards approach to be applied at the conversion plant currently under construction at the Centro Tecnológico da Marinha em São Paulo in Aramar.

- Establishing a special procedure upon agreement by the parties - for the commissioning of the reactor of Central Nuclear Atucha II, which will receive its first fuel load.
- Following up the evolution of the negotiations for the construction of Angra 3, for which a surveillance system will be provided.
- Following up the implantation of the new uranium enrichment cascades of Indústrias Nucleares do Brasil. This activity will require investment in equipment.

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In connection with the technical evolution in the application of safeguards, the ABACC's Secretariat will be observing any new development in the international scenario, so to be kept updated and permanently upgraded in its performance. For 2010, some projects in the area of technical cooperation - such as those related to 3D Laser, ultrasonic seals and surveillance systems - with special validation requirements, will be seen as challenges. INSPECTORS, OFFICIALS OF ABACC AND LECTURERS

Inspectors

Brazilian Inspectors

André Luís Nunes Barbosa Celia Christiani Paschoa Portoghese Cláudio Luiz de Oliveira Cleber Lopes de Oliveira Cyro Teiti Enokihara Dilmar Araújo Junior Dulce Maria Daher Fábio Cordeiro Dias Florentino Menchero Palacio Francisco José de Oliveira Ferreira Geraldo Renha Junior Gevaldo Lisboa de Almeida Hebe Peixoto Schirmmer Irineu do Amaral Gurgel Filho Ivan José Tomazelli Ivan Santos João Batista Borges Jorge Eduardo Silva Cardoso Santos José Afonso Barros Filho José Augusto Perrotta José Cláudio Pedrosa José da Silva Guimarães José Gláucio Motta Garone José Henrique Buchmann José Roberto Tavares de Paiva

José Wanderley Santana da Silva Leonardo Souza Dunley Lilia Crissiuma Palhares Luiz Antônio da Silva Luiz Antônio de Mello Marcos Sodré Grund Maria Clarisse Lobo Iskin Miriam Dias Pacheco Max Teixeira Facchinetti Olga Y. Mafra Guidicini Orpet José Margues Peixoto Pedro Dionísio de Barros Ricardo Gonçalves Gomide Sergio Barros Paixão Silvio Gonçalves de Almeida Walter Pereira Willians Roberto Baldo

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Argentine Inspectors

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CONSULTING INSPECTORS

Alfredo Lucio Biaggio Aníbal Bonino Antonio Abel Oliveira Elena Maceiras Elías Palacios Osvaldo Alberto Cristallini Sonia Fernández Moreno ENGLISH

FOR CONTAINMENT

Brazilian and Argentine Facilities under the Quadripartite Agreement

Brazilian Facilities

NO TOCAR

Arranjo Grafite-Urânio Subcrítico
Armazenagem ARAMAR MBA1 – Estocagem MBA2 – Transferência Gasosa
Central Nuclear Almirante Álvaro Alberto – Unidade 1
Central Nuclear Almirante Álvaro Alberto – Unidade 2
Central Nuclear Almirante Álvaro Alberto – Unidade 3 (Under construction)
Coordenadoria de Desenvolvimento e Tecnologia de Combustíveis (IPEN-CNEN/SP)
Fábrica de Combustível Nuclear - Enriqueci- mento MBA1 – Estocagem MBA2 – Processo
Fábrica de Combustível Nuclear – Reconversão e Pastilhas / Componentes e Montagem
Laboratório de Desenvolvimento de Elementos de Separação Isotópica MBA1 – Estocagem, Purificação e Transferência, Tratamento de rejeito MBA2 – Laboratórios MBA3 – Processo

Laboratório de Desenvolvimento de Instrumentação e Combustível Nuclear

Laboratório de Enriquecimento Isotópico da Unidade de Enriquecimento Almirante Álvaro Alberto

Laboratório de Espectroscopia a Laser MBA1 – Estocagem, Laboratórios MBA2 – Processo

Laboratório de Geração Núcleo-elétrica

Laboratório de Materiais e Combustível Nuclear - (CDTN/CNEN-MG)

Laboratório de Materiais Nucleares

Laboratório de Salvaguardas

Planta Piloto de Enriquecimento de Urânio MBA1 – Estocagem

MBA2 - Processo

Projeto Reprocessamento (IPEN-CNEN/SP)

Reator Argonauta (IEN/CNEN-RJ)

Reator IEA-R1

Reator IPR-R1

Subcrítica Universidade Federal de Pernambuco

Unidade Crítica IPEN/MB-01

Unidade de Produção de Hexafluoreto de Urânio

Argentine Facilities

Bunker de Almacenamiento	Laboratorio de Química Analítica	
Central Nuclear Atucha I	Laboratorio de Recuperación Uranio	
Central Nuclear Atucha II (Under construction)	Enriquecido	
Central Nuclear Embalse	Laboratorio de Salvaguardías	
Circuito Experimental de Alta Presión	Laboratorio Facilidad Radioquímica	
Circuito Experimental de Baja Presión	Laboratorio Materiales Fabricación Aleaciones Especiales	
Daño por Radiación	Laboratorio para Ensavos Post-Irradiación	
Departamento de Instrumentación y Control	Laboratorio Mock Un	
Depósito Central de Material Fisionable Especial	Laboratorio Triple Altura	
Depósito Central de Material Fisionable Especial Irradiado	Material Nuclear en Usos No Nucleares	
Depósito de Material Nuclear	Planta de Conversión a Hexafluoruro de Uranio	
División Productos de Fisión	Planta de Conversión a UO2	
División Materiales Nucleares	Planta Piloto de Enriquecimiento de Uranio MBA 1: Almacenamiento MBA 2: Proceso	
Fábrica de Elementos Combustibles		
Nucleares	Planta de Fabricación de Elementos Combus-	
Fábrica de Elementos Combustibles –	tibles para Reactores de Investigación	
Facilidad de Almacenamiento de Combustibles	Planta Experimental de Materiales Combustibles γ Pulvimetalurgia	
Irradiados de Reactores de Investigación		
Facilidad Experimental de Conversión por Vía	Planta de Fabricación de Polvos de Uranio	
Seca	Reactor Argentino 0	
Laboratorio Alfa	Reactor Argentino 1	
Laboratorio Química Analítica en Medios Activos	Reactor Argentino 4	
Laboratorio de Física Nuclear	Reactor Argentino 6	
Laboratorios de la Gerencia de Química	Reactor Argentino 8	
Laboratorio de Nanoestructura	Reactor Argentino 3	

Members of the commission

On behalf of the Republic of Argentina

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President of the Nuclear Regulatory Authority

Alternates: Gabriel Terigi

On behalf of the Federative Republic of Brazil

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