

ABACC

2013

RELATÓRIO ANUAL >  
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Garantindo o uso pacífico da energia nuclear na Argentina e no Brasil

Garantizando el uso pacífico de la energía nuclear en Argentina y Brasil

Guaranteeing the peaceful use of nuclear energy in Argentina and Brazil

## SECRETARIA DA ABACC



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### **Contabilidade de Materiais Nucleares**

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### **Apoio Técnico**

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### **Administração e Finanças**

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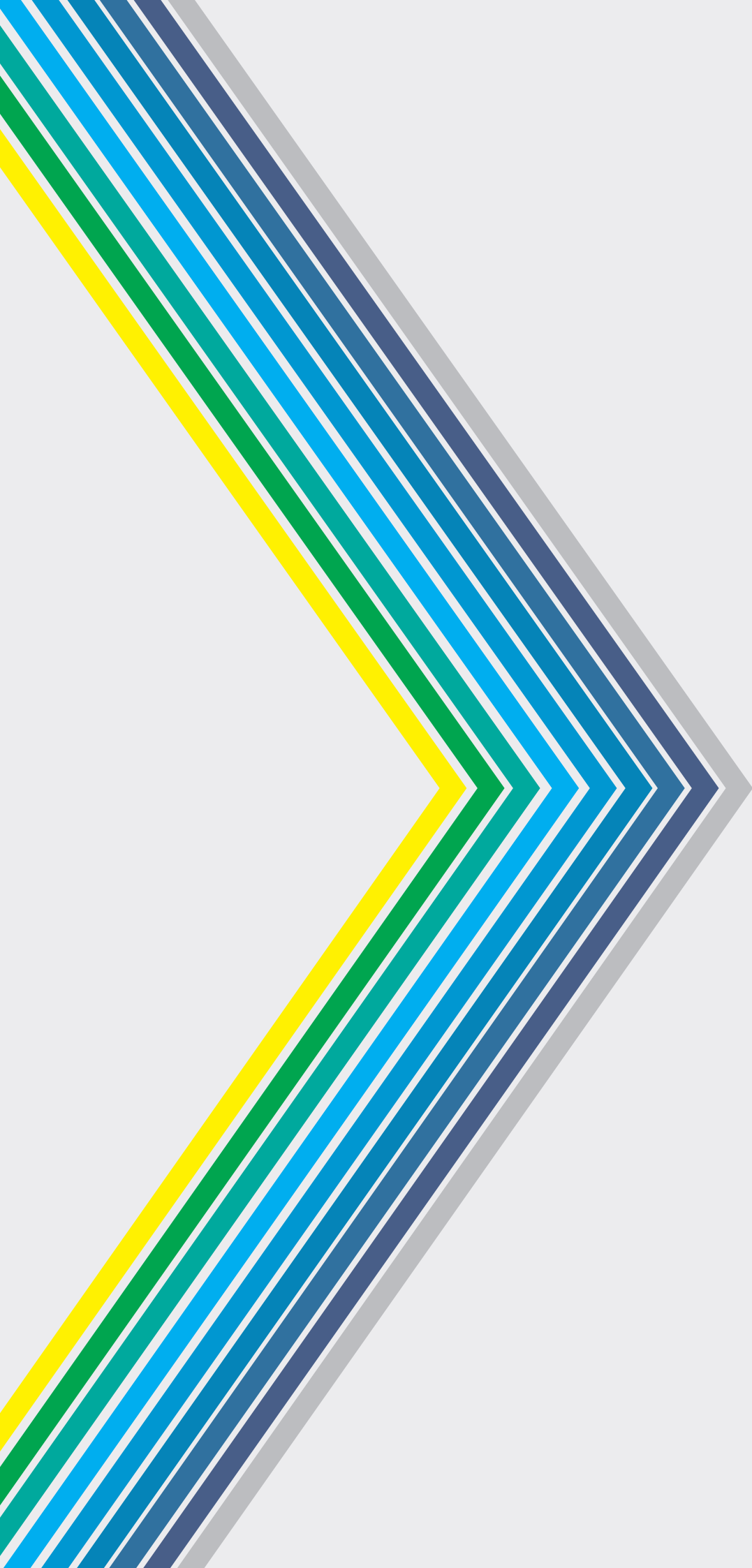
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ABACC

2013



## ANNUAL REPORT

MESSAGE FROM THE SECRETARY	36	
ACTIVITIES OF THE COMMISSION	38	
TECHNICAL ACTIVITIES	39	
PRESENCE OF ABACC AT EVENTS	44	
STRENGTHENING TECHNICAL CAPABILITY	45	
TECHNICAL COOPERATION	46	
INSTITUTIONAL ACTIVITIES	47	
ADMINISTRATIVE AND FINANCIAL ACTIVITIES	48	
OUTLOOK FOR 2014	49	
ABACC INSPECTORS	50	
FACILITIES UNDER THE QUADRIPARTITE AGREEMENT	52	

# MESSAGE FROM THE SECRETARY

The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC), in accordance with article XI, item i, of the Agreement between the Federative Republic of Brazil and the Argentine Republic for the Exclusively Peaceful Use of Nuclear Energy, and complying with that established in article 16, item h, of the Regulation of the Secretariat of ABACC, presents its 2013 ANNUAL REPORT.

During 2013, in compliance with its mission, which has a central objective of the application of safeguards in the facilities and nuclear materials of Brazil and Argentina under safeguards, ABACC performed 118 inspections, 70 in Argentina and 48 in Brazil. As a result of this work, ABACC can guarantee the Brazilian and Argentine societies and the international community that the two countries have performed their nuclear activities in full compliance with the commitments undertaken in the area of nuclear safeguards and of the exclusively peaceful use of nuclear energy. Undoubtedly, the excellent results obtained, and the efficiency and effectiveness in the performance of its mission, would not have been achieved without the dedication and professionalism of the team of inspectors, support staff and officers from ABACC. The Secretariat wishes to compliment everyone, recognizing them and thanking them for their excellent work.

The high technical level maintained in the relationship between ABACC, the International Atomic Energy Agency and the nuclear authorities of the two countries, has been a fundamental factor in the successful management of the Common System of Accounting and Control of Nuclear Materials (SCCC) and of the Quadripartite Agreement.

Since its creation twenty two years ago, ABACC has been building a reputation of technological

excellence, based on an institutional policy that encourages the continuous training of its staff. This is allied to a constant concern of always being in line with the state of the art of technological developments in processes and equipment, in the sector of nuclear safeguards. As in previous years, our employees have had the opportunity to participate in events and technical seminars in several countries and in qualification courses.

The high technical qualification of our employees is reflected in the developments and improvements of methods and processes of safeguards, producing considerable quality gains in the system. An example of this is the ABACC-CRISTALLINI Method, used in the sampling of  $UF_6$ , devised by the Argentine radiochemist Osvaldo Cristallini, projected and developed within ABACC, with the collaboration and support of Argentine and Brazilian specialists. This method has important advantages in relation to the traditional method of collecting  $UF_6$  such as reduction in the quantity of wastes produced and lower costs. The method is in an approval stage with the IAEA. In parallel, in partnership with the New Brunswick Laboratory of the United States Department of Energy, its approval is being sought with ASTM International.

The IAEA and ABACC have acquired and placed in operation the new surveillance system, camera and image storage server, named Next Generation Surveillance System (NGSS), in several nuclear facilities in Argentina and Brazil. With the most modern technical characteristics, this is an authentication system with superior levels of security to those conventional surveillance systems currently in operation, guaranteeing the detection of alterations in the hardware of the camera.

The purchase, by ABACC, of new generation cameras, model DCM-C5, and DCI/DCR-I

recorders, represents a major investment in the modernization of our monitoring and surveillance equipment. They are being acquired by both agencies and its utilization will continue to follow the protocol of joint use of equipment.

Mindful of the continuity of the nuclear programs of Brazil and Argentina, ABACC officers have been developing measures to set up the systems that are required with respect to the safeguards approach of the new facilities entering into operation: in Argentina, the Central Nuclear Atucha II, and in Brazil, the Fábrica de Combustível Nuclear - Enriquecimento module 2, and the Unidade de Produção de Hexafluoreto de Urânio, both of Indústrias Nucleares do Brasil.

At the end of the year, there was a change in the composition of the Brazilian representation of the Commission, highest hierarchical body of ABACC. Ambassador Glivânia Maria de Oliveira was given a new post in the Brazilian Foreign Ministry and her place was taken by Ambassador Paulo Roberto Tarrisse da Fontoura.

The Secretariat of ABACC registers its recognition and special thanks to Ambassador Glivânia for the valuable contribution that she made to ABACC during her time on the Commission. She is wished every success in her new post. Ambassador Tarrisse is welcomed in the certainty that his wide professional experience will bring great benefits to ABACC. The Secretariat also wishes to record its recognition and thanks to all the members of the Commission, whose expertise and guidance have significantly facilitated the excellent performance and the progress of the work.

In December, ABACC was honored by the visit of Ambassador María Del Carmen Squeff, from the Argentine Ministry of External Relations and

Under-Secretary for Foreign Policy, and Ambassador Carlos Antonio da Rocha Paranhos, from the Brazilian Ministry of External Relations and Under-Secretary General for Political Affairs. During the occasion, the two diplomats confirmed the vision of their respective governments of believing ABACC to be a fundamental pillar of the bilateral relationship in nuclear matters and as a mechanism to build mutual trust.

This report aims to be a vehicle of communication between ABACC and society in general, in particular Brazil and Argentina. For this reason, it describes the activities in an appropriate language, without many technical terms but always maintaining the quality of the information. The Secretariat hopes that the reading of this report allows a clear understanding of the activities carried out by the Agency during 2013, demonstrating, at the same time, that ABACC is complying with its mission efficiently and effectively.



**Odilon Marcuzzo do Canto**  
SECRETARY

# ACTIVITIES OF THE COMMISSION

The Commission, the highest hierarchical body of ABACC, is responsible for providing the technical and policy guidelines to be applied by the Agency in compliance with its mission. The Commission has four members, two Argentines and two Brazilians.

The members from Brazil were Ambassador Glivânia Maria de Oliveira, replaced by Ambassador Paulo Roberto Tarrisse da Fontoura at the December meeting, and Dr. Angelo Fernando Padilha. The members from Argentina were Ambassador Gustavo Eduardo Ainchil and Dr. Francisco Spano.

In accordance with that stipulated in the Regulations of the Commission, three ordinary meetings were held in March, August and December.

At the March meeting, the Commission approved the 2012 Annual Report. The report to be distributed to the public was delivered and approved subsequently. The 2013 budget estimate was presented to the members of the Commission in addition to the Audit Report and the Summary of the Accounting Report for the period. Also at this meeting, the Secretariat made a presentation about the cooperation existing

between ABACC and the European Community and another presentation about the actions arising from the subjects discussed at the 12<sup>th</sup> Liaison Committee Meeting of the Quadripartite Agreement.

At the August meeting, the 2014 Work Plan and Budget were approved. The Secretariat presented a document about the technical cooperation between ABACC and its partners, which was distributed to the participants.

At the end of the December meeting, in accordance with the regulatory procedure regarding the rotation of the members of the Secretariat, the Minutes for the Transfer of the Secretariat were signed. Lic. Antonio Abel Oliveira became the Secretary of ABACC and Dr. Odilon Marcuzzo do Canto became the Deputy Secretary.



# TECHNICAL ACTIVITIES

## Results obtained

In 2013, the Secretariat of ABACC achieved positive results. This was achieved through the work and collaboration of the various sectors that prepared, gave technical support, performed and evaluated the inspections, applied different technologies and measurements of safeguards, and provided the corrective and preventive maintenance of the equipment and updated the databanks that supported the inspectors during the inspections. The cooperation with the national authorities and with the International Atomic Energy Agency was also important.

With these results, it can guarantee the international community, and particularly the Argentine and Brazilian societies, that ABACC has fully complied with its mission of applying the nuclear safeguards in the two countries, satisfying all the criteria established by the Common System of Accounting and Control of Nuclear Materials and those of the IAEA.

## Performed inspections

ABACC, in coordination with the International Atomic Energy Agency and cooperation from the national authorities of both countries, performed a total of 118 inspections in the nuclear facilities of the two countries, of which 70 were in Argentina and 48 were in Brazil. In these inspections, there was an inspection effort of 586 inspector-days in the field and a total availability of 1,160 inspector-days. The total availability included the work of the inspectors

in the preparation of the inspections, the monitoring of the technical activities with respect to safeguards equipment and the preparation of the inspection reports, activities performed within the planned inspection effort.

## Main inspection activities performed in Argentina

### ▶ FÁBRICA DE ELEMENTOS COMBUSTIBLES

Short notice random inspections and the annual physical inventory verification inspection were performed along with the activities corresponding to the design information verification of the facility.

### ▶ COMPLEJO FABRIL CÓRDOBA

Inspections were performed for the verification of the domestic transfers of the produced nuclear material and for the verification of the physical inventory and the design information verification. At the end of the nuclear material balance period, the transfers were verified. They complied in full with the requirements established in the safeguards criteria of ABACC and the IAEA.

### ▶ CENTRAL NUCLEAR EMBALSE

The spent fuel transfer campaign from the storage pool to the silos, concluded in December, was verified.

▶ CENTRAL NUCLEAR ATUCHA II

The safeguards system of the Central was installed.

▶ LABORATORIO MOCK UP

Design information verification inspections were performed in which the implementation of the modifications described in the new Design Information Questionnaire was verified.

## Main inspection activities performed in Brazil

▶ FÁBRICA DE COMBUSTÍVEL NUCLEAR – RECONVERSÃO E PASTILHAS/COMPONENTES E MONTAGEM

Short notice random inspections and the annual physical inventory verification inspection were performed along with activities corresponding to the design information verification of the facility.

▶ CENTRO TECNOLÓGICO DA MARINHA EM SÃO PAULO

Announced and unannounced inspections were performed, with the participation of ABACC and the IAEA, at the Planta Piloto para Enriquecimento de Urânio and at the Laboratório de Enriquecimento Isotópico.

▶ FÁBRICA DE COMBUSTÍVEL NUCLEAR – ENRIQUECIMENTO

Announced and unannounced inspections were performed, with the participation of ABACC and the IAEA.

▶ UNIDADE DE PRODUÇÃO DE HEXAFLUORETO DE URÂNIO

ABACC and the IAEA monitored, for safeguards purposes, the commissioning of the plant and performed design information verification activities.

## Main technical activities developed by ABACC in the Argentine facilities

▶ CENTRAL NUCLEAR EMBALSE

ABACC and the IAEA are implementing the Unattended System which will perform the surveillance of the spent fuel transfers from the pool to the silos, considerably reducing the required inspection effort.

▶ CENTRAL NUCLEAR ATUCHA II

The new Next Generation Surveillance System – NGSS was installed to replace the cameras of the Digital Multi-Channel Optical Surveillance System. The new cameras have the advantage of permitting the verification of their authenticity by ABACC and the IAEA.

## Main technical activities developed by ABACC in the Brazilian facilities

▶ CENTRAL NUCLEAR ANGRA I

Tests were performed with the Digital Cerenkov Viewing Device equipment for the verification of the low spent fuel elements and of long term decay, which cannot be verified using the conventional Improved Cerenkov Viewing Device. These tests were performed during the inspection for the inventory verification of the fuels in the pool. The results were satisfactory.

▶ CENTRO TECNOLÓGICO DA MARINHA EM SÃO PAULO

Preventive and corrective maintenance was performed on safeguards equipment from the Laboratório de Enriquecimento Isotópico and from the Planta Piloto de Enriquecimento de Urânio.

This maintenance included the substitution and the replacement with the Next Generation Surveillance System type cameras.

▶ FÁBRICA DE COMBUSTÍVEL NUCLEAR – ENRIQUECIMENTO

New surveillance cameras were installed to satisfy the requirements of the safeguards approach.

▶ FÁBRICA DE COMBUSTÍVEL NUCLEAR – RECONVERSÃO E PASTILHAS/COMPONENTES E MONTAGEM

A series of operational and reliability tests were performed on the neutron collar used for the verification of the fuel elements. Improvements were made in the mechanical assembly of the system and the procedures were updated for the use of the equipment.

## Main technical activities developed at ABACC

▶ UPDATE OF THE ACCOUNTING RECORDS DATABANK

The ABACC accounting records databank was updated regularly with the information from the Inventory Change Reports, from the Material Balance Reports and from the Physical Inventory Listings, received from Argentina and Brazil. After being confirmed, this information was used to inform the national authorities and the IAEA, on a monthly basis, of the accounting situation of the nuclear material balance areas of the two countries.

▶ UPDATE OF THE SOFTWARE FOR THE JOINT AUDITING OF RECORDS (SJAR)

The Software for the Joint Auditing of Records, used by both ABACC and the IAEA, was updated to receive and process accounting data from the Brazilian facilities, generated by the e-Gamma program (Accounting and Control of Nuclear Materials), developed by the Comissão Nacional de Energia Nuclear and the accounting data produced by the ICAIFE (Informes Contables Archivos de

Inspección en Formato Electrónico) program, developed by the Autoridad Regulatoria Nuclear.

▶ UPDATE OF THE OPERATIONS DATABASE

The Operations Database is being migrated to an environment integrated to the Internet in order to improve the interface between the users and the database, to improve the accessibility and to increase the security of the ABACC databases.

▶ TERTIARY STANDARDS OF NATURAL AND ENRICHED URANIUM

The tertiary standards of natural uranium and enriched uranium, used for the calibration of non-destructive analysis equipment, are being approved by the IAEA for common use by both agencies. These standards were prepared under the supervision of ABACC and with the collaboration of the Argentine and Brazilian institutions.

▶ ENRICHMENT MEASUREMENT TESTS

The first enrichment measurement tests using the Electrically Cooled Germanium System, belonging to the IAEA were satisfactory. The operation of this system is simpler and has the same precision as the conventional equipment.

## New approaches and systems in the safeguards application

▶ FOR THE VERIFICATION OF NUCLEAR MATERIAL IN CONVERSION PLANTS

Planta de Conversión a  $UO_2$

The safeguards approach for the verification of pure uranyl nitrate is being analyzed by the Autoridad Regulatoria Nuclear, ABACC and the IAEA. The approach to be used must satisfy the safeguards criteria of ABACC and of the IAEA and the legal limits of the Quadripartite Agreement.

**Unidade de Produção de Hexafluoreto de Urânio**

ABACC and the IAEA concluded the analysis of the calibration data of the storage tanks of pure uranyl nitrate and decided on the type of instrumentation to be used for the measurement of the level of the tanks during the inspections. These tanks allow for the satisfactory verification of the nuclear material that enters in safeguards, without the need of instrumentation from ABACC or IAEA permanently installed.

▶ IN URANIUM ENRICHMENT PLANTS

**Fábrica de Combustível Nuclear – Enriquecimento**

**Module 1**

The Comissão Nacional de Energia Nuclear, ABACC and the IAEA are analyzing alternatives on how to use the bird’s eye view system in the unannounced inspections. The objective is to improve the safeguards application tool in its current design, associated with other tools, in order to increase the effectiveness and efficiency of the safeguards activities. The procedures for the use of this verification system in the inspections are under development.

**Module 2**

The Comissão Nacional de Energia Nuclear presented to ABACC and to the IAEA the program of installation and commissioning of Module 2 and the conceptual aspects of the controlled visual access for the inspectors in the unannounced inspections and the design information verification. ABACC and the IAEA will install the surveillance equipment and approve the inspection procedures before the commissioning of the first cascade of Module 2.

**Feed and withdrawal system**

The surveillance system installed in the area of weighing the UF<sub>6</sub> was modified. This modification allows the operator to have a greater flexibility in the movement of the cylinders and the safeguards are more efficient for both agencies.

**Laboratório de Desenvolvimento de Elementos de Separação Isotópica**

The safeguards approach was agreed between CNEN, ABACC and the IAEA. They are awaiting the result of the initial environmental sampling to the safeguard approach to enter into force.

**Planta Piloto de Enriquecimiento de Uranio**

The safeguards approach was agreed between Autoridad Regulatoria Nuclear, ABACC and the IAEA with the definition of the images that will be used as support for the design information verification inspections.

▶ UNATTENDED SYSTEM

The unattended system is used to verify the transfer of spent fuel from the pools to the silos at the Central Nuclear Embalse. The unattended system project is subdivided into three subsystems, with the following responsibilities:

SUBSYSTEM	RESPONSIBILITY
Transfer between the pool and the welding cell	IAEA
Transfer from the welding cell to the silos	ABACC
Final storage in the silos	IAEA

Tests were carried out to analyze the performance of the system and to obtain the experience required for its operation. ABACC and the IAEA took certain technical and administrative measures for the system to be installed more rapidly. ABACC and the IAEA, with the support of the Autoridad Regulatoria Nuclear and of the operator, will offer training to the inspectors to familiarize them with the unattended system.

▶ SAFEGUARDS SYSTEM FOR THE CENTRAL NUCLEAR ATUCHA II

ABACC and the IAEA, with the support of the Autoridad Regulatoria Nuclear and of the operator, placed into operation the systems for the safeguards approach. This allows the reactor to enter into operation satisfying the safeguards approach.

## New technologies, equipment and developments for safeguards

### ▶ NEXT GENERATION SURVEILLANCE SYSTEM

The new surveillance system for the storage of images named Next Generation Surveillance System was placed into operation in some of the facilities in Argentina and in Brazil. This system allows for the authentication with levels of security superior to those of the surveillance systems in operation and guarantees the detection of alterations in the hardware.

### ▶ TRANSMISSION OF THE STATE OF HEALTH OF SAFEGUARDS EQUIPMENT

The implementation of the technique of the transmission of the state of health of safeguards equipment in some surveillance systems is in the process of evaluation by ABACC and the IAEA. In order to facilitate the use of the technique, the CNEN and ARN delegated the responsibility of some activities to ABACC, which will present a proposal for the implementation of the technique in specific facilities.

### ▶ ABACC-CRISTALLINI UF<sub>6</sub> SAMPLING METHOD

The ABACC-Cristallini method is based on the adsorption capacity in alumina pellets. It very advantageously replaces the traditional technique of sampling with ASTM ampoules. ABACC is certifying the method with ASTM International and is promoting its validation, by the IAEA, via the "Member State Support Program to the IAEA Safeguards" in which Argentina and Brazil participate.

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

ABACC, in compliance with its task to apply the Common System for the Accounting and Control of Nuclear Materials and the Quadripartite Agreement, promotes and regularly participates in technical and coordinating meetings at bilateral, trilateral and quadripartite levels with the national authorities and with the IAEA. It also promotes, whenever required, meetings and technical coordination visits for the solution of specific questions referring to the application of safeguards.

## Status of the Design Information Questionnaires and the Facility Attachments

The Design Information Questionnaires contain the main characteristics of the facilities and the nuclear processes required for the determination of safeguards measures to be applied. The Facility Attachments are the documents that describe these measures. These documents are used in the inspections. The Design Information Questionnaires are updated periodically, either for changes in the facilities, or from information obtained during the inspections.

In 2013, 19 Design Information Questionnaires were submitted for revision.

There are 12 Facility Attachments in force for Brazilian facilities and 27 for Argentine facilities. ABACC, in conjunction with the IAEA, is revising/preparing 32 other Facility Attachments.

# PRESENCE OF ABACC AT EVENTS

## INTERNATIONAL SEMINAR NUCLEAR POLICY IN ARGENTINA AND THE WORLD: THE PRESENT SITUATION AND PERSPECTIVES

- ▶ Buenos Aires, Argentina  
25 – 26 April

### **Paper presented:**

ABACC, a tangible example of cooperation and integration between Argentina and Brazil.

## ESARDA 35<sup>TH</sup> ANNUAL MEETING

- ▶ Bruges, Belgium  
27 – 30 May

## MEETING OF THE BOARD OF GOVERNORS OF THE IAEA

- ▶ Vienna, Austria  
3 – 6 June

## LATIN AMERICAN SECTION – AMERICAN NUCLEAR SOCIETY SYMPOSIUM

- ▶ Buenos Aires, Argentina  
24 – 28 June

## INMM 54<sup>TH</sup> ANNUAL MEETING

- ▶ Palm Springs, United States  
15 – 18 July

## MEETING OF THE BOARD OF GOVERNORS OF THE IAEA

- ▶ Vienna, Austria  
9 – 13 September

## 56<sup>TH</sup> GENERAL CONFERENCE OF THE IAEA

- ▶ Vienna, Austria  
16 – 20 September

# STRENGTHENING TECHNICAL CAPABILITY

## REGIONAL TRAINING COURSE ON STATE SYSTEMS OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIAL

- ▶ **Objective:** To present the main procedures and systems used by the IAEA for the implementation of international safeguards.
- ▶ 5 ABACC officers were trained.

## ABACC-IAEA JOINT AUDIT OF ACCOUNTING RECORDS

- ▶ **Objective:** Update the inspectors in the use of the procedures for the preparation of the accounting reports and the SCCC annexes.
- ▶ 7 Brazilian inspectors were trained.

## ADVANCED WORKSHOP FOR ABACC INSPECTORS

- ▶ **Objective:** Planning and performance of joint ABACC-IAEA inspections with respect to the application of safeguards in the Brazilian and Argentine facilities under the Quadripartite Agreement.
- ▶ Two courses were offered. At the course held in Buenos Aires, 30 Argentine inspectors were trained with the collaboration of the Autoridad Regulatoria Nuclear and the Centro Atómico Constituyentes. At the course held at the ABACC headquarters, in Rio de Janeiro, 15 Brazilian inspectors were trained.

# TECHNICAL COOPERATION

## WITH THE US DEPARTMENT OF ENERGY

- ▶ **Action Sheet 15** - Development of Environmental Sampling Capability in Support of the Regional Agreement between Argentina and Brazil
- ▶ **Action Sheet 21** - Laboratory Quality Assurance through Analytical Standards and Sample Exchange Programs
- ▶ **Action Sheet 22** - Cooperation on Developing a Spent Fuel Gross Defect Detection System at ATUCHA-I
- ▶ **Action Sheet 23** - Cooperation on Training for ABACC
- ▶ **Action Sheet 24** - Developing a System for ABACC to Function as a Regional Center for Education and Training on Safeguards
- ▶ **Action Sheet 25** - Secure Remote Access for ABACC
- ▶ **Action Sheet 26** - Evaluation of the ABACC-Cristallini Method for sampling  $UF_6$  for Isotopic Determination

## WITH THE EUROPEAN COMMISSION

- ▶ **Project 3D Laser System**
- ▶ **Project Ultrasonic Seals**

## WITH THE KOREA INSTITUTE OF NUCLEAR NONPROLIFERATION AND CONTROL

- ▶ **Project #1:** Cooperation and Training
- ▶ **Project #2:** Cooperation on Interchanging Safeguards Concepts on How to Improve the Collaboration between R/SSAC Systems and the IAEA.



# INSTITUTIONAL ACTIVITIES

The ABACC Secretary attended the commemoration of the 46<sup>th</sup> anniversary of the signing of the Treaty of Tlatelolco, held in February in Mexico City.

In March, ABACC was visited by the Director of the Department of Disarmament of the Russian Ministry of External Relations, accompanied by the Russian Ambassador and the head of protocol of the General Consulate in Brazil. The head of the Division of Sensitive Technologies of the Ministry of External Relations of Brazil also accompanied the visit. A visit was also made by a researcher from the Danish Institute for International Studies, who is preparing a project whose focus is nonproliferation with an emphasis on security and safeguards.

The Secretary participated in the event “Emerging Powers and the Global Nuclear Order”, organized by the University of Brasília and the Carnegie Endowment for International Peace, held in Brasília, on 19 March.

In May, the Secretariat of ABACC participated in a workshop, the first of a series of activities for the research project “The Brazilian perspective with respect to the mechanisms of global governance”, organized by the BRICS Policy Center.

In August, the secretary, the deputy secretary and the planning and evaluation officers of ABACC participated in a tribute honoring Dan Benison, one of the advisers involved in the creation of ABACC. After this event, on 23<sup>rd</sup> August, the secretary of ABACC attended the General Conference of OPANAL.

The International Nuclear Atlantic Conference – INAC 2013, held in November in Recife, was supported by ABACC. The event brought together a large number of professionals in the nuclear field from several countries, which was an excellent

opportunity to highlight the work of ABACC.

To achieve this, folders about the Agency were distributed to the participants in Portuguese, Spanish and English.

At the invitation of the presidency of the Comisión Nacional de Energía Atómica and coordination of Autoridad Regulatoria Nuclear, the secretaries and the planning and evaluation officers of ABACC visited the facilities of the Proyecto CAREM, the Laboratorio Mock Up in Pilcaniyeu and the Centro Atómico Bariloche. The group also visited INVAP in Bariloche. In the same month, an ABACC officer participated in the Brazilian Congress of Metrology, which was supported by ABACC. The paper “The Importance of Metrology in the Measurements of Safeguards Applied to Nuclear Materials” was presented at the congress.

The reports for OPANAL, declaring that no activity prohibited by the provisions of the Treaty of Tlatelolco was performed in Brazil or Argentina, were sent to the two governments in January and July.

ABACC was the object of a PhD thesis of the University College London that studied the role of the epistemic community in the creation of the Agency. This year, the thesis was made into a book, which cites ABACC, in several chapters, as a model institution that promotes nuclear nonproliferation.

Two academic studies were carried out, which focused on the Brazil – Argentina cooperation in the nuclear field, and consequently the role of ABACC in this context. One was a doctorate thesis that studied the Agreement between the Federative Republic of Brazil and the Argentine Republic for the Exclusively Peaceful Use of Nuclear Energy and the Quadripartite Agreement, and a master’s dissertation about the institutions of cooperation in the nuclear field.

# ADMINISTRATIVE AND FINANCIAL ACTIVITIES

Once again, as has been happening since the creation of the Agency, during December 2013 and January 2014, the administrative and financial sector was submitted to an independent external audit that encompassed all its activities. The auditors examined the operations, the books and the accounting records and the supporting documents in accordance with the standards used in Brazil, with the extension and depth that was considered necessary. It was concluded that the financial statements adequately represented the asset and financial position of ABACC.

From the point of view of those responsible for the sector, the accounting aspects and the internal controls of the administrative and financial area during 2013 achieved favorable results. The systematic evaluation of the costs and the continuous comparison of the prices continued being irreplaceable tools in the optimization of the use of resources of the Agency. In this context, the permanent supervision of the secretaries and the frequent information to the Commission of the key aspects, such as the development of resources, the accounting records, the financial operations and the asset situation of the Agency, continued to be habitual practice.

With respect to the budgetary performance with foreign exchange, the panorama was not favorable. Insufficient contributions during 2013 resulted in the operational fund of ABACC reaching limited financial resources, especially when analyzed in terms of the amount of time the Agency could operate. This condition, and the uncertainty about the next contribution of financial resources by the governments, obliged the Secretariat to adopt a policy to perform solely essential activities and to postpone others that, despite being important, would not immediately compromise the accomplishment of the institutional operations.

Accordingly, the expenses during the year did not reach 84% of the approved budget and practically all the investment in equipment, instruments, computer and infrastructure equipment, which amounted to over 10% of the budget, was postponed until 2014.

# OUTLOOK FOR 2014



Among the main activities that ABACC aims to perform in 2014, the following are highlighted:

- ▶ In the campaigns of transfers of spent fuel to the silos at the Central Nuclear Embalse, ABACC, in conjunction with the IAEA and with the support of ARN and of the operator, intends to make the unattended system operational. In conjunction with the interim and unannounced inspections, this will replace the current regime of inspections that requires the permanent presence of inspectors during the campaigns;
- ▶ To develop the safeguards approach with the use of technology and appropriate methods to support the provisional transfers of spent fuel from the Central Nuclear Atucha I to the Central Nuclear Atucha II, forecast for 2015;
- ▶ In the conversion facilities, ABACC has a goal of finalizing the safeguards approach for the Planta de Conversión a  $UO_2$  in Córdoba and the monitoring with appropriate measures of safeguards the commissioning of the Unidade de Produção de Hexafluoreto de Urânio in Iperó. In both the plants, the safeguards approach includes the use of Short Notice Random Inspections;
- ▶ Acquisition of the “NGSS” surveillance systems to be used in the new facilities, in addition to proceeding with the programmed replacement in facilities that have old systems. ABACC has developed a strategic plan of acquisition for these systems over a five year period;
- ▶ To start the implementation of the system of quality control in all the operational areas of the Secretariat of ABACC.

ABACC will continue the development and implementation of safeguards approaches for the new facilities, with emphasis on the expansion of the Planta Piloto de Enriquecimento de Urânio of Indústrias Nucleares do Brasil and on the test reactors at the Laboratório de Geração Núcleo-elétrica and the Proyecto Reactor Prototipo - CAREM 25.

With respect to the technical evolution regarding safeguards, the Secretariat of ABACC will be following the new developments that may occur in the international scenario, continually seeking to update and improve its work.

ABACC will continue its verification work for the exclusively peaceful use of nuclear energy in Argentina and Brazil, in accordance with the nonproliferation policy adopted by the two countries.



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INSTALAÇÕES BRASILEIRAS  
SUJEITAS AO ACORDO  
QUADRIPARTITE  
INSTALACIONES BRASILEÑAS  
SUJETAS AL ACUERDO  
CUATRIPARTITO  
BRAZILIAN FACILITIES UNDER  
THE QUADRIPARTITE  
AGREEMENT

**NOME / NOMBRE / NAME**

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 ([Em construção](#)) ([En construcción](#)) (Under construction)

Coordenadoria de Desenvolvimento e Tecnologia de Combustíveis

Fábrica de Combustível Nuclear - Enriquecimento

MBA1 – Estocagem

MBA2 – Processo

Fábrica de Combustível Nuclear – Reconversão e Pastilhas /Componentes e Montagem

Instalação de Estocagem de Elementos Combustíveis ([Em projeto](#)) ([En proyecto](#)) (In project)

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

Laboratório de Materiais Nucleares

Laboratório de Salvaguardas

Planta Piloto de Enriquecimento de Urânio

MBA1 – Estocagem

MBA2 – Processo

Projeto Reprocessamento

Reator Argonauta

Reator IEA-R1

Reator IPR-R1

Reator Multipropósito Brasileiro ([Em projeto](#)) ([En proyecto](#)) (In project)

Subcrítica Universidade Federal de Pernambuco

Unidade de Armazenamento Complementar de Combustível Irradiado da CNAAA ([Em projeto](#)) ([En proyecto](#)) (In project)

Unidade Crítica IPEN/MB-01

Unidade de Produção de Hexafluoreto de Urânio



INSTALAÇÕES ARGENTINAS  
SUJEITAS AO ACORDO  
QUADRIpartite  
INSTALACIONES ARGENTINAS  
SUJETAS AL ACUERDO  
CUATRIPARTITO  
ARGENTINE FACILITIES UNDER  
THE QUADRIpartite  
AGREEMENT



**NOME / NOMBRE / NAME**

Bunker de Almacenamiento

Central Nuclear Atucha I

Central Nuclear Atucha II

Central Nuclear Embalse

Circuito Experimental de Alta Presión

Circuito Experimental de Baja Presión

Departamento de Instrumentación y Control

Depósito Central de Material Fisionable Especial

Depósito Central de Material Fisionable Especial Irradiado

Depósito de Material Nuclear

Depósito de Uranio Enriquecido

División Productos de Fisión

División Materiales Nucleares

Fábrica de Elementos Combustibles Nucleares

Fábrica de Elementos Combustibles – Reactores de Investigación

Facilidad de Almacenamiento de Combustibles Irradiados de Reactores de Investigación

Facilidad Experimental de Conversión por Vía Seca

Laboratorio Alfa

Laboratorio Química Analítica en Medios Activos

Laboratorio de Física Nuclear

Laboratorio de Enriquecimiento Isotópico por Laser

Laboratorios de la Gerencia de Química

Laboratorio de Nanoestructura

Laboratorio de Química Analítica

Laboratorio de Recuperación Uranio Enriquecido

Laboratorio de Salvaguardias

Laboratorio Facilidad Radioquímica

Laboratorio Materiales Fabricación Aleaciones Especiales

Laboratorio para Ensayos Post-Irradiación

Laboratorio Mock Up

Laboratorio Triple Altura

Material Nuclear en Usos No Nucleares

Planta de Conversión a Hexafluoruro de Uranio

Planta de Conversión a  $UO_2$ 

Planta Piloto de Enriquecimiento de Uranio

MBA 1: Almacenamiento

MBA 2: Proceso

Planta de Fabricación de Elementos Combustibles para Reactores de Investigación

Planta Experimental de Materiales Combustibles y Pulvimetalurgia

Planta de Fabricación de Polvos de Uranio

Planta de Producción de Polvos de Uranio (Em projeto) (En proyecto) (In project)

Reactor Prototipo CAREM 25 (Em construção) (En construcción) (Under construction)

Reactor Argentino 0

Reactor Argentino I

Reactor Argentino 4

Reactor Argentino 6

Reactor Argentino 8

Reactor Argentino 3

Reactor Multipropósito Argentino (Em projeto) (En proyecto) (In project)



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**Dr. Francisco Spano**

Presidente da Autoridade Regulatória Nuclear

**Suplente:** Lic. Elena Maceiras

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Presidente de la Comisión Nacional de Energía Nuclear

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**Alternate:** Minister Héctor Fassi

**Dr. Francisco Spano**

President of the Nuclear Regulatory Authority

**Alternate:** Lic. Elena Maceiras

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