



ABACC

Agência Brasileiro-Argentina de Contabilidade
e Controle de Materiais Nucleares

Agencia Brasileño-Argentina de Contabilidad
y Control de Materiales Nucleares

Brazilian-Argentine Agency for Accounting
and Control of Nuclear Materials

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ANNUAL REPORT 2024

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MESSAGE FROM THE SECRETARY



Marco Marzo
Secretary

It is with great satisfaction that I present the activity report of the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) for the year 2024.

I am pleased to report that the Annual Verification Plan was fully carried out in 2024, with 112 inspections and 61 visits conducted to verify project information at nuclear facilities. Based on the evaluation of all verification activities, the ABACC Secretariat concluded that both countries have complied with all the terms of the Bilateral Agreement.

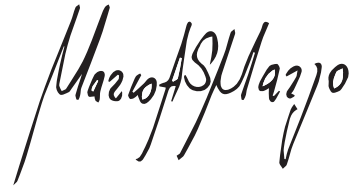
Among the various verification activities, I would like to highlight the successful verification of the campaign for the transfer of irradiated fuel elements from the Angra 2 Nuclear Power Plant to the Unidade de Armazenamento a Seco (UAS), carried out between April and September. This verification required the near-continuous presence of ABACC inspectors at the facility, which contributed to an increase of nearly 40% in the total inspection effort compared to the previous year.

The nuclear material verification system is essential for reaching technically robust and independent safeguards conclusions. The key element of this system is the inspector. In the ABACC model, inspectors play an even more important role, as they are responsible for coordinating joint inspections with the International Atomic Energy Agency (IAEA). Accordingly, the ABACC Secretariat prioritizes the periodic training of inspectors. In 2024, four in-person courses and two workshops were organized, training a total of 51 inspectors.

Another essential element of the verification system is the use of modern nuclear measurement, containment, and surveillance technologies. In this context, the modernization of the surveillance systems installed by ABACC plays a prominent role. In 2024, among other developments, I highlight the complete modernization of the containment and surveillance systems at some of the main nuclear facilities in both countries. Currently, of the 80 surveillance cameras installed in the two countries, 47 are owned by ABACC.

I would like to highlight the excellent coordination between the ABACC and IAEA operations sections, which allowed the joint inspections - including unannounced ones and short-notice random inspections - to be successfully carried out.

I also emphasize that the implementation of efficient and effective safeguards in both countries - based on the ABACC model - requires that inspectors, authorities, and operators be fully aware of their rights, obligations, and responsibilities. In this way, it is possible for activities to be carried out with good coordination among all parties involved. Therefore, I thank everyone who directly or indirectly contributed to another successful year of our work.



EXECUTIVE SUMMARY

The objective of ABACC is the implementation of the Common System of Accounting and Control (SCCC), established by the Agreement between the Republic of Argentina and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement). The SCCC is a set of technical verification and control criteria and procedures designed to ensure that nuclear materials are not diverted for the manufacture of nuclear weapons or other nuclear explosive devices.

The ABACC Annual Verification Plan was fully accomplished in 2024, with the completion of 112 inspections and 61 Design Information Verification (DIV) visits. In Argentina, 91 inspections and DIVs were conducted, with an inspection effort of 156 inspector-days, while in Brazil, 82 inspections and DIVs were carried out with an inspection effort of 387 inspector-days.

Based on the results of the assessments of all verification activities, the Secretariat concluded that there was no evidence of non-compliance with the countries' commitments under the Bilateral Agreement.



In 2024, compared to 2023, the inspection effort and inspector availability increased by 60% and 40%, respectively. This was due to the campaign of transfers of irradiated fuel elements from the Almirante Álvaro Alberto Nuclear Power Plant - Angra 2 Nuclear Power Plant to the UAS.

As part of the continuous training program for staff and inspectors, a number of in-person courses were offered, most notably the general safeguards course for Brazilian inspectors and the containment and surveillance course for Argentine inspectors, in addition to a workshop on inspection procedures at fabrication plants in both countries.

An intense schedule of safeguards implementation coordination meetings with the national authorities of the two countries and with the IAEA was fulfilled. In addition to these, the meetings scheduled in the Agreement between the Republic of Argentina, the Federative Republic of Brazil, ABACC and the IAEA for the Application of Safeguards (Quadripartite Agreement), the 22nd Meeting of the Liaison Sub-Committee (SLC), the 38th ABACC/IAEA Coordination Meeting and the 22nd Meeting of the Liaison Committee (LC) were held.

ABACC carried out various activities within the scope of technical cooperation agreements with the following entities: the Autoridad Regulatoria Nuclear (ARN), from Argentina, the Comissão Nacional de Energia Nuclear (CNEN), from Brazil, the IAEA, the European Atomic Energy Community (EURATOM), the European Safeguards Research and Development Association (ESARDA), the United States Department of Energy (DoE), and the Korean Institute of Nonproliferation and Control (KINAC).

The "ABACC-Cristallini UF₆ Sampling Method," which replaces the gaseous UF₆ sampling method, was used for the first time during an inspection at a uranium enrichment facility subject to the SCCC.

Mention should be made of the visit to ABACC by delegations from governments participating in the 33rd Plenary Meeting of the Nuclear Suppliers Group (NSG), 25 fellows of the United Nations Disarmament Fellowship Program (UNODA), 25 participants by the Supporting Nuclear Disarmament Verification Expertise in Non-Nuclear Weapons States conference, organized by the Latin American Research and Innovation Hub and by the Verification Research, Training and Information Centre (VERTIC).

1. ABACC

1.1 History and Mission

ABACC was created on July 18, 1991, with the signing of Agreement between the Republic of Argentina and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement), which came into force on December 12, 1991, after being ratified by the National Congress of both countries.

ABACC's mission is to verify that Argentina and Brazil comply with the commitments established in the Bilateral Agreement regarding the exclusively peaceful use of nuclear energy. To this end, ABACC applies a bilateral safeguards system called the Common System of Accounting and Control of Nuclear Materials (SCCC), which lays down the verification criteria and procedures to be applied to all nuclear materials in all nuclear activities in both countries, thus guaranteeing the timely detection capability of possible diversions of these materials for the manufacture of nuclear explosive devices.

In December 1991, ABACC signed the Quadripartite Agreement with Argentina, Brazil and the IAEA, which entered into force in March 1994.

A timeline showing the main events that have marked the history of ABACC is presented below.

Creation of ABACC in the Agreement between Argentina and Brazil for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement) signed in July and coming into force in December

1991

Signature of the Agreement between Argentina, Brazil, ABACC and the International Atomic Energy Agency (IAEA) for the Application of Safeguards (Quadripartite Agreement)

Start of ABACC's activities and first inspections carried out

1992

Inauguration of ABACC's headquarters in Rio de Janeiro

1993

Cooperation Agreement with the Agency for the Non-Proliferation of Nuclear Weapons in Latin America and the Caribbean (OPANAL)

Mutual Cooperation Adjustment with the National Nuclear Energy Commission (CNEN)

The Quadripartite Agreement and the General Part of its Subsidiary Arrangements take effect

Protocol of Cooperation with the National Atomic Energy Commission (CNEA) in Argentina

1994

Cooperation Agreement with the United States Department of Energy

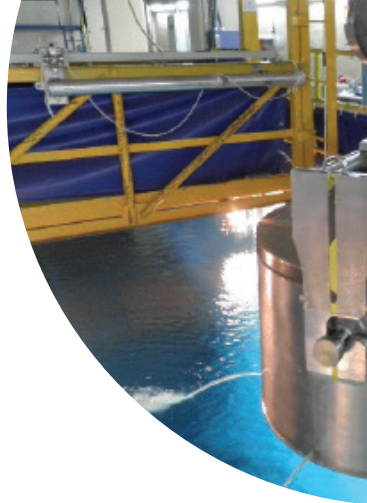
First Joint Inspections with the IAEA

1996

Protocol of Cooperation with National Nuclear Regulatory Body in Argentina (now the Nuclear Regulatory Authority – ARN)

1997

Approval of the document "Guidelines for Coordination of Routine and Ad-Hoc Inspection Activities between the Agency and ABACC"





ABACC's first international publication on the gaseous UF₆ sampling method using alumina pellets (ABACC-Cristallini Method)

2007

Approval of the safeguards approach for the INB Uranium Enrichment Plant in Brazil

2006

Implementation of the Joint Auditing of Records System (SJAR) developed by ABACC for carrying out joint accounting audits with the IAEA

Cooperation Agreement between ABACC and the Korea Institute of Nuclear Non-Proliferation and Control (KINAC)

2004

Approval of the safeguards approach for the ARAMAR Enrichment Development Plant in Brazil

2001

Approval of the safeguards approach for the ARAMAR Isotope Enrichment Laboratory in Brazil

1000 inspections

2000

ABACC completes 1000 inspections

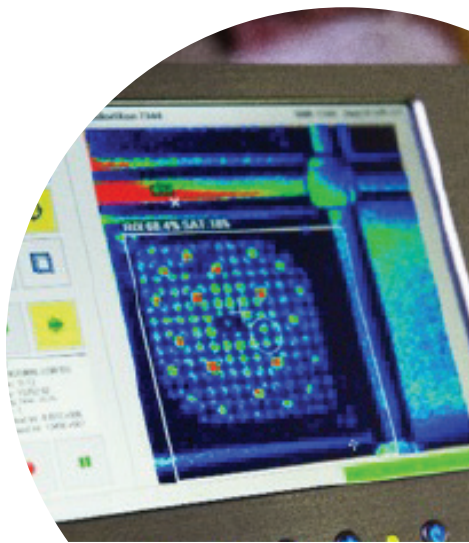
1999

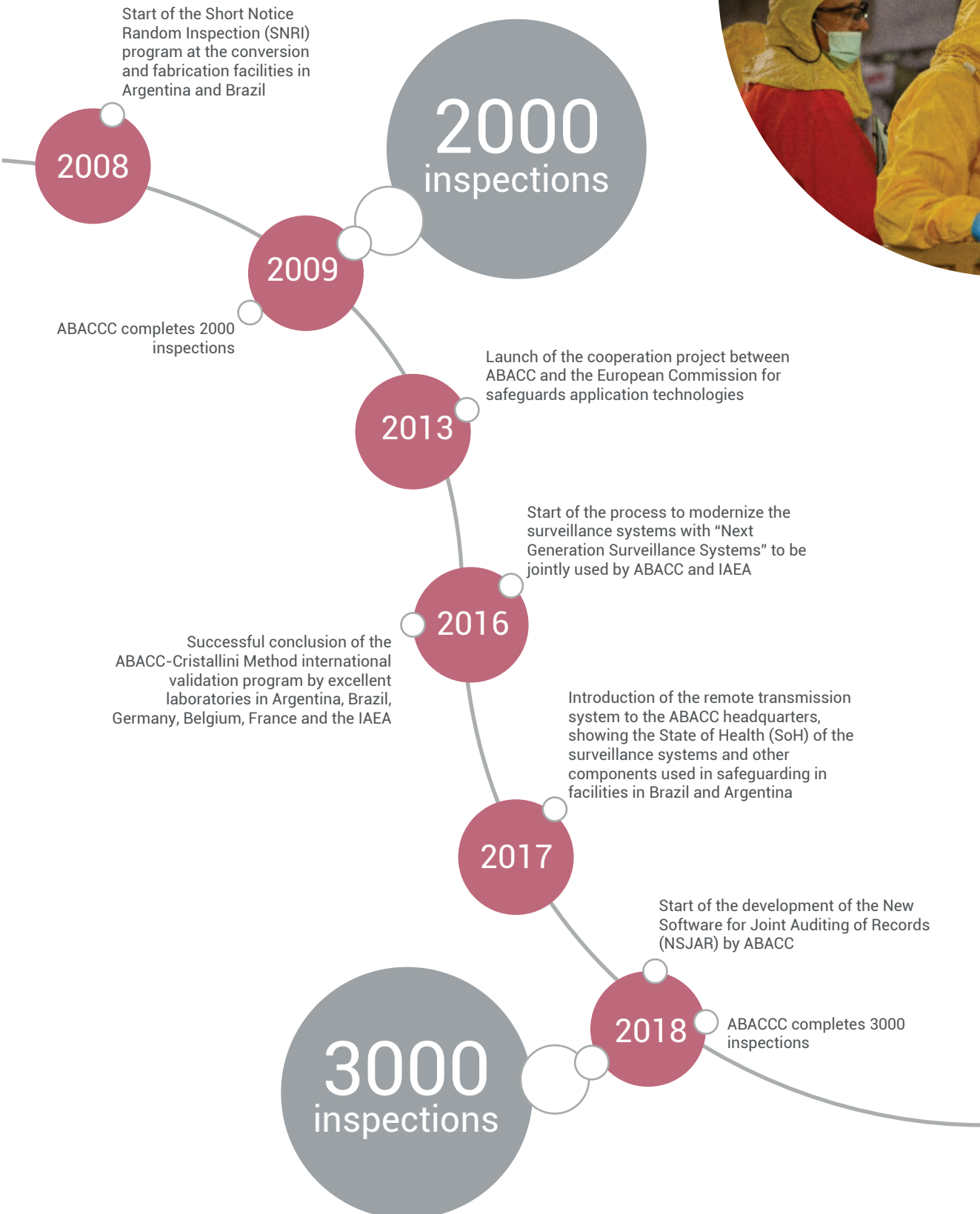
Technical Cooperation Agreement between ABACC and the IAEA

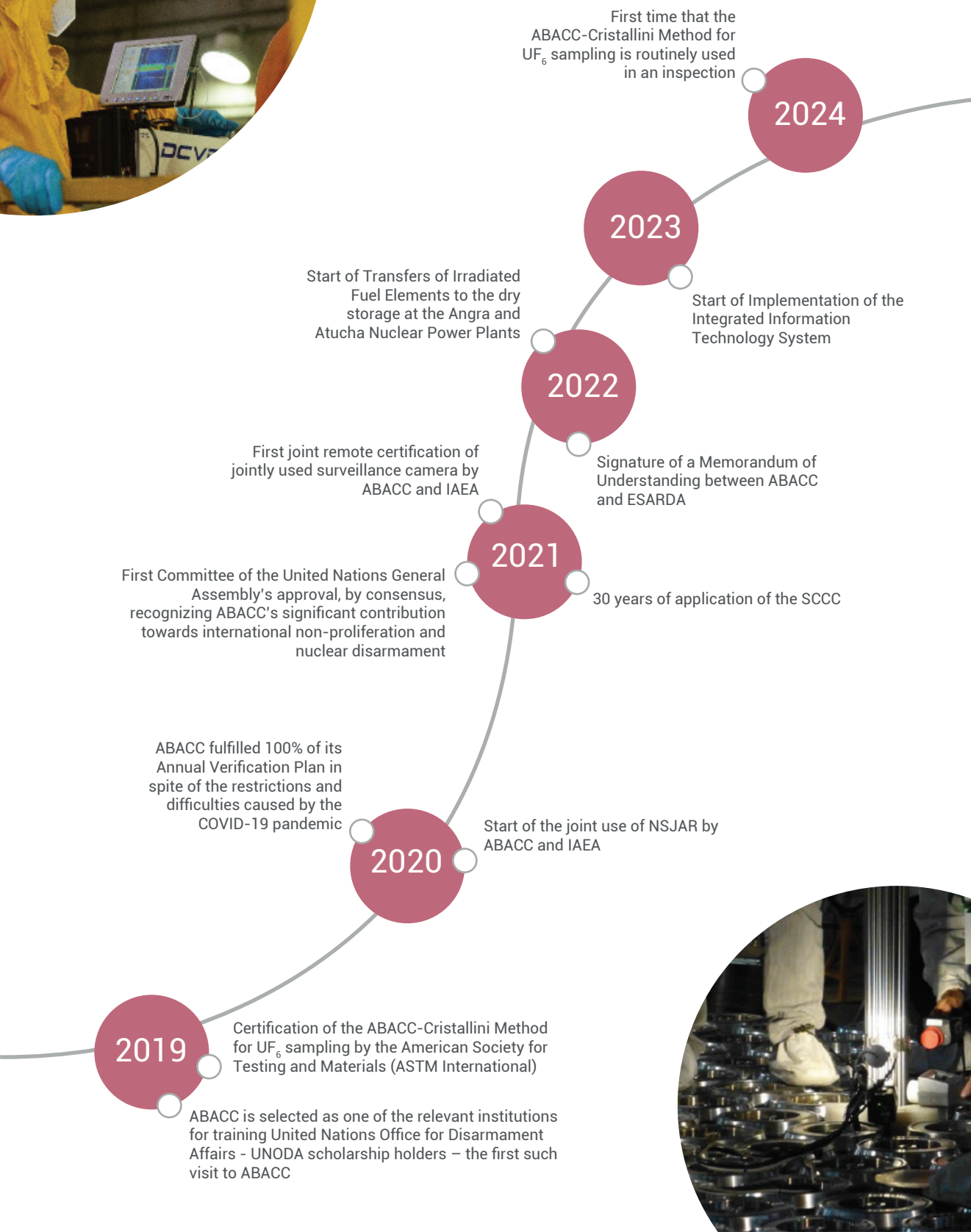
Cooperation Agreement with the European Atomic Energy Commission (EURATOM)

1998

Approval of the safeguards approach for the Pilcaniyeu Uranium Enrichment Facility in Argentina

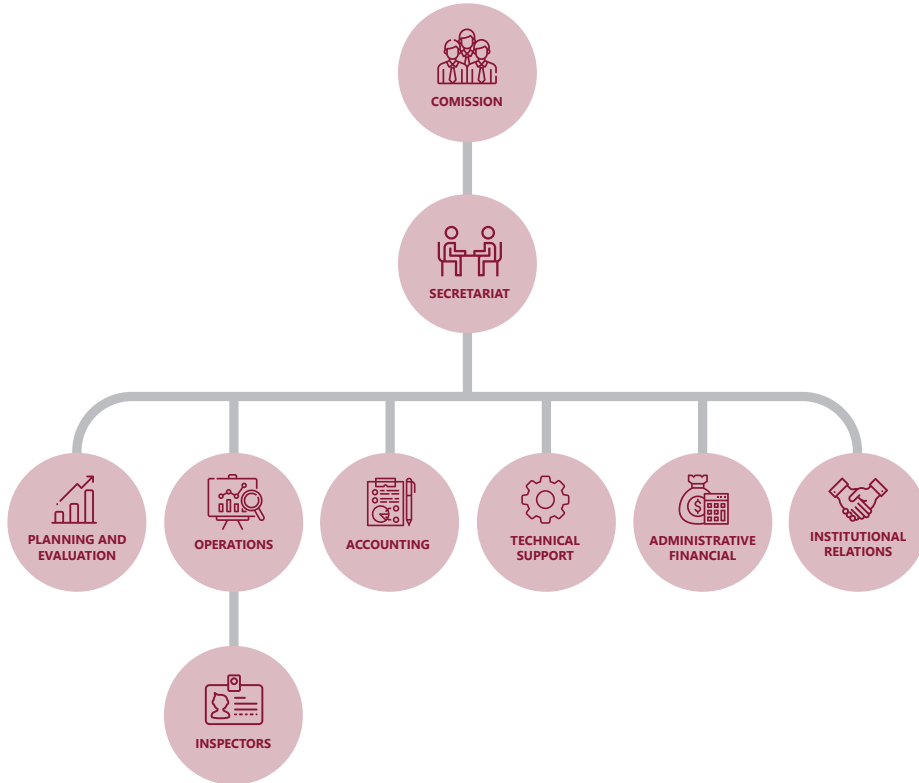






1.2 Organizational Chart

ABACC's organizational chart is shown below.



The Commission, which is ABACC's governing body, is responsible for defining the guidelines that direct the Secretariat's work and for supervising its activities. It is made up of four members with two nominated by each country.

The Secretariat, which is ABACC's executive body, is composed of twelve members, six Argentinians and six Brazilians. The Secretary and Deputy Secretary, who alternate annually in the performance of their duties, are the highest ranking officers in the hierarchy. They are responsible for ensuring that SCCC's control and verification activities are carried out efficiently and effectively.


Eleven administrative and auxiliary staff support the routine activities that are necessary for the smooth running of the Secretariat.

The inspectors, nominated by the respective country and appointed by the ABACC Commission, are not full-time employees of the agency, but are called for specific inspection missions. The inspectors are employees of the nuclear industry in the two countries, which enables them to carry out inspections more effectively. It should be noted that, as a special feature of the SCCC, inspectors from Argentina carry out inspections at Brazilian facilities and inspectors from Brazil at Argentine facilities.

2. ABACC’S VERIFICATION ACTIVITIES

The chart below presents the facilities subjected to verification by ABACC on December 31, 2024.

TYPE OF FACILITY	ARGENTINA	BRAZIL	TOTAL
Conversion and Fuel Fabrication	9*	2	11
Uranium Enrichment	2	3	5
Power Reactors	5*	3*	8
Research Reactors / Critical and Sub Critical Units	6*	7*	13
Others (Research & Development Facilities, Storage Units, etc.)	28	10*	38
TOTAL	50	25	75



* One under construction

The table below shows the verification activities performed between January 1, 2024, and December 31, 2024.

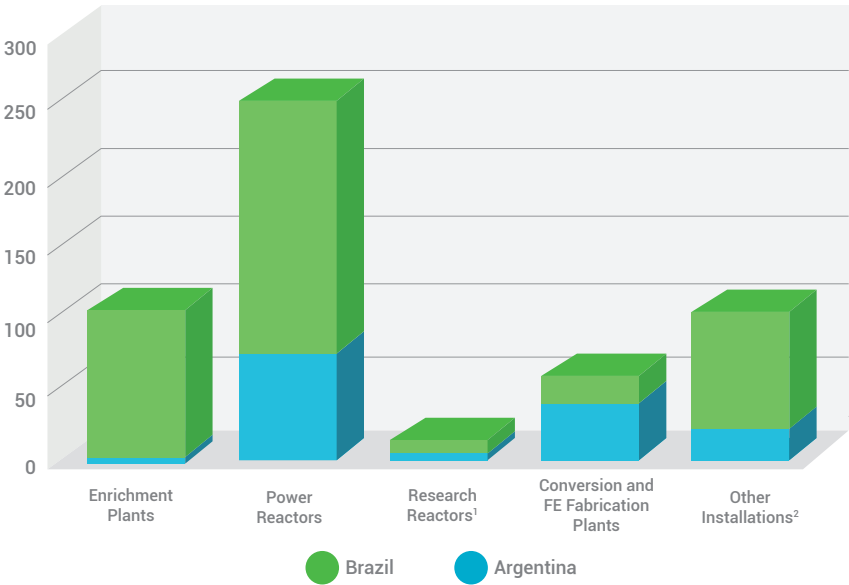
TYPE OF ACTIVITY	ARGENTINA	BRAZIL	TOTAL
Physical inventory verification (PIV)	30	18	48
Interim inspections (II) and short notice inspections (SNRI and SNVA) *	20	27	47
Unannounced inspections (UI)	2	15	17
Design Information Verification (DIV)	39	22	61
TOTAL	91	82	173
Inspection effort (inspector-days)	156	387	543
Availability (inspector-days)	445	767	1222

* SNRI - Short Notice Random Inspection and SNVA – Short Notice Visual Access

To carry out the verification activities, the Secretariat called in 27 Brazilian inspectors out of the 53 designated and 28 Argentinian inspectors out of the 47 designated

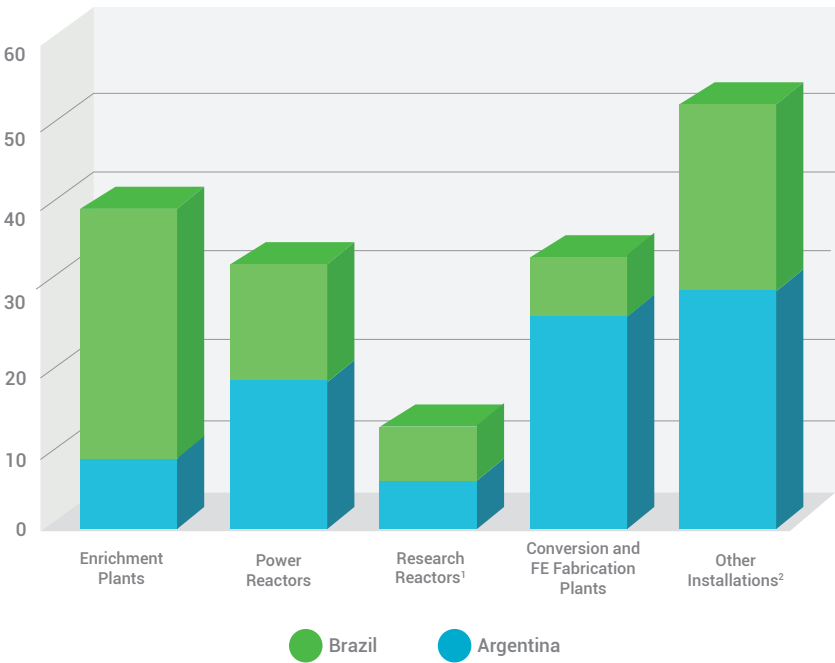
The figures below show the verification effort and number of inspections carried out by type of installation.

VERIFICATION EFFORT BY TYPE OF FACILITY
(INSPECTORS X DAYS) - 2024



1. Includes Critical and Subcritical Assemblies
2. Includes Laboratories, Storages, R&D, Production of Radioisotopes, etc.

VERIFICATION ACTIVITIES BY TYPE OF FACILITY - 2023



1. Includes Critical and Subcritical Assemblies
2. Includes Laboratories, Storages, R&D, Production of Radioisotopes, etc.

To verify the declarations of nuclear material, 1581 non-destructive measurements were carried out during the inspections with portable safeguards equipment and a total of 49 samples of nuclear material were collected in Argentina and Brazil for the determination of the element uranium and the isotope U-235 in the analytical laboratories of the ABACC network. In addition, a total of 56 environmental samples were collected for uranium particle analysis.

To control the nuclear material in the facilities of both countries, 1,265 seals have been applied and 47 ABACC surveillance cameras have been used. Seventeen technical missions were carried out for the installation or preventive or corrective maintenance of measurement equipment and containment and surveillance systems.

ABACC, together with the IAEA, has systems that remotely transmit information on the State of Health (SoH) of safeguards equipment at nuclear facilities to its headquarters, allowing certain faults to be checked and corrected in good time, minimizing the occurrence of loss of knowledge of nuclear material inventories. These systems are currently installed at the Atucha I, Atucha II and Embalse Nuclear Power Plants, in Argentina, and the Angra 2 Nuclear Power Plant, in Brazil.

The campaign to transfer irradiated fuel elements from the Angra 2 Nuclear Power Plant to the UAS, carried out between April and September, was successfully verified using a hybrid verification system, with the partial use of an Unattended Monitoring System (UMS) in the field.

Also, the transfers of irradiated fuel elements from the Atucha I Nuclear Power Plant to the deposit of Almacenamiento en Seco de Elementos Combustibles Quemados (ASECQ) were successfully verified using the UMS.

579 accounting reports received from Argentina and Brazil were processed, and 95 accounting audits were carried out at nuclear facilities. At the end of 2024, the value of the total inventory of material in the two countries registered an increase of 3.1% in significant quantities compared to the previous year.

3. COORDINATION OF ACTIVITIES WITH THE IAEA

According to the terms set out in the Quadripartite Agreement, ABACC coordinates its verification activities with those of the IAEA to the maximum in order to minimize the duplication of efforts. To this end, ABACC and IAEA share containment, surveillance, detection and measurement systems under the concept of “joint use” and develop inspection approaches and procedures for the facilities subject to SCCC and IAEA safeguards, which contributes to the optimization and effectiveness of the respective safeguards.

In 2024, ABACC and the IAEA held a total of 28 technical meetings, both bilateral (ABACC and IAEA) and also with the respective national authorities, to discuss specific issues on the application of safeguards in facilities in both countries.



Technical Meeting

As set down in the Quadripartite Agreement, the 22nd Meeting of the Liaison Committee was held in Brasilia in September. This meeting was preceded by the 22nd Meeting of the Liaison Subcommittee, held in Buenos Aires in June. The 38th Coordination Meeting between the ABACC and the IAEA was also held in Vienna in September. These meetings are held annually to assess the status of implementation of safeguards and improve verification activities for nuclear materials and facilities.

4. TECHNICAL COOPERATION

Cooperation with institutions that work in the area of nuclear safeguards is relevant for the exchange of information on safeguarding concepts and techniques and for the development of projects of interest to ABACC, in order to contribute to increasing the efficiency and effectiveness of its activities.

ABACC holds technical cooperation agreements with institutions in Argentina, Brazil, the European Community, the United States, South Korea and with the IAEA.

In 2024, the main technical cooperation activities carried out were:

4.1 ABACC – IAEA Cooperation



ABACC participated as an observer at the IAEA Safeguards Members States Support Program Coordinators' Meeting, contributing on issues to increase the efficiency and effectiveness of international safeguards.



Meetings and technical visits by IAEA staff to ABACC headquarters and the analytical laboratories of the ABACC network in Argentina and Brazil to discuss cooperation actions on the ABACC-Cristallini UF_6 sampling method, including actions for IAEA approval of the method for routine use.



Continued participation of ABACC network laboratories in intercomparison exercises organized by the IAEA.



Technical Cooperation ABACC-IAEA

4.2 ABACC – United States Department of Energy (DoE) Cooperation



The proficiency testing activities of the analytical laboratories in the ABACC network were planned within the framework of the Safeguards Measurement Evaluation Program (SMEP) of the New Brunswick Laboratory Program Office (NBLPO).



A meeting with NBLPO experts to establish virtual technical working groups on destructive analysis of nuclear material, to exchange knowledge and experience between the ABACC laboratory network and DoE laboratories in the areas of uranium chemistry measurements and mass spectrometry.

4.3 ABACC – EURATOM/European Community Cooperation



Meeting with the EURATOM Safeguards Director and team, on the occasion of the 68th IAEA General Conference, to exchange information of common interest, especially on the training of inspectors from both organizations

4.4 ABACC–ESARDA (European Research and Development Association Cooperation)



Participation in ESARDA working group meetings on material balance assessment.

4.5 ABACC – KINAC (Korean Institute of Nuclear Nonproliferation and Control) Cooperation



Meeting with the chair of KINAC, at the time of the 68th IAEA General Conference, to exchange information of common interest, including collaboration between the agencies.

5. TRAINING

Inspector training courses contribute to ABACC maintaining the high level of effectiveness of its inspections. The following training courses were held in 2024.




• General Course for ABACC Inspectors



Date: 04 - 08/03
Venue: Rio de Janeiro - Brasil
Participants: 5




**ABACC-AIEA Joint Audit
Course on Accounting
Records (NSJAR)**



 **Date:** 15 - 18/05
 **Venue:** Rio de Janeiro - Brasil
 **Participants:** 9




**ABACC-AIEA Joint Audit
Course on Accounting
Records (NSJAR)**



 **Date:** 07 - 10/05
 **Venue:** Buenos Aires - Argentina
 **Participants:** 8




**Course for ABACC
Inspectors on
Containment and
Surveillance Systems
(C&S)**



 **Date:** 06 - 09/08
 **Venue:** Buenos Aires - Argentina
 **Participants:** 12




**Workshop on SNRI
Inspection Procedures
in Fabrication Plants**



 **Date:** 01 - 04/10
 **Venue:** Buenos Aires - Argentina
 **Participants:** 8

**Workshop on SNRI
Inspection Procedures
in Fabrication Plants**



 **Date:** 29/10 - 01/11
 **Venue:** Rio de Janeiro - Brasil
 **Participants:** 9

6. INSTITUTIONAL ACTIVITIES

Since 2019, ABACC was included, in the agenda of the UNODA Program, launched by the United Nations General Assembly in 1978. In 2024, 25 fellows of different nationalities visited the headquarters of ABACC, in Rio de Janeiro, and visited the Fábrica de Elementos Combustíveis – FCN/INB, in Resende.



UNODA Program

The IAEA Director General, Rafael Mariano Grossi, visited ABACC's headquarters in June.



Director General of IAEA at ABACC

ABACC was visited by representatives of 48 government participating in the Nuclear Suppliers Group (NSG), that participated in the 3rd Plenary Meeting, held in Rio de Janeiro, under the presidency of Brazil, in July.



Representatives of 48 Government Participating in The NSG

ABACC took part in EXPO INAC 2024, during the 11th edition of INAC (International Nuclear Atlantic Conference) in Rio de Janeiro in May. The ABACC stand received a large number of visitors who had the opportunity to learn about ABACC's activities. In addition, ABACC presented the paper "Three Decades of ABACC: A Regional System in the Framework of International Safeguards and Nuclear Cooperation for Peaceful Purposes".



EXPO INAC 2024

The ABACC Secretary gave a presentation at the opening of the 46th Annual Meeting of ESARD, in May, by virtual means.

ABACC also participated in the following events listed in chronological order:

- On March 27, at the invitation of the Navy's Director General for Nuclear and Technological Development, the ABACC Secretaries attended the launching ceremony of the "Tonelero" submarine. The event was attended by Presidents Luiz Inácio Lula da Silva and Emmanuel Macron;
- On April 15, the ABACC Secretaries took part in the event commemorating the 52nd anniversary of the IRD/CNEN as well as the Radiological Protection Day. The event included a technical-scientific seminar, with the participation of professionals from the nuclear sector and, at their invitation, the Secretary gave the lecture "Safeguards and the nuclear-powered submarine";



52nd anniversary of the IRD/CNEN as well as the Radiological Protection Day

- On April 22, the Deputy Secretary took part in a seminar in Buenos Aires to launch the book "Brazil and Argentina: 200 years of Diplomatic Relations", organized by the Alexandre Gusmão Foundation (FUNAG), which is attached to the Brazilian Ministry of Foreign Affairs;
- On April 22, at the invitation of the Bureau of Arms Control, Deterrence, and Stability of the U.S. Department of State, the Secretary participated in the workshop on Nuclear Risk Reduction in the Western Hemisphere, presenting the ABACC model in the session on Nuclear-Weapon-Free Zones to Advance Disarmament and Reduce Nuclear Risks;



Launch of the Book "Brazil and Argentina: 200 Years of Diplomatic Relations"



Workshop on Nuclear Risk Reduction in the Western Hemisphere

- On April 30, in Rio de Janeiro, the Deputy Secretary attended the swearing-in ceremony of the Secretary of Nuclear Safety and Quality of the Navy, Admiral Petronio Augusto Siqueira de Aguiar. The event was presided over by the Commander of the Navy, Admiral Marcos Sampaio Olsen;



Swearing-In Ceremony of the Secretary of Nuclear Safety and Quality of the Navy

- On May 14, in São Paulo, the Deputy Secretary took part in the Handover Ceremony at the Centro Tecnológico da Marinha (CTMSP). The event was presided over by the Commander of the Navy, Admiral Marcos Sampaio Olsen;
- On May 22 and 24, in Buenos Aires, the Deputy Secretary lectured on "Nuclear issues and non-proliferation; Peaceful Uses", at the Instituto del Servicio Exterior de la Nación (ISEN). Thirty students took part in the lecture, which covered topics such as: the nuclear panorama in the world, the status of the Argentine and Brazilian nuclear programs, the creation of ABACC, the Common System of Accounting and Control of Nuclear Materials (SCCC), among others;



Deputy Secretary lectured on "Nuclear issues and nonproliferation; Peaceful Uses", at the ISEN



Planning and Evaluation Officer gave a lecture on ABACC at UERJ



Talk Entitled "ABACC: Origins & Structure for NSG Consulting group

- On June 19, the Argentinian Planning and Evaluation Officer gave a special lecture on ABACC, its history and activities, to the students of the International Relations course at the State University of Rio de Janeiro (UERJ);
- On July 9, as part of the 33rd Plenary Meeting of the Nuclear Suppliers Group (NSG), the ABACC Secretary, at the invitation, gave a talk entitled "ABACC: Origins & Structure";



Secretary took part in the second session of the NPT review

- From July 22 to August 2, in Geneva, the Secretary took part in the second session of the Preparatory Committee of the Conference of the Parties in charge of the NPT Review, and made a statement highlighting the SCCC model of Argentina and Brazil, the strong international credibility achieved in the effective and efficient verification of nuclear activities in both countries, and cooperation with the IAEA;
- From September 9 to 13, in Vienna, IAEA Board of Governors;
- From September 16 to 20, the 68th IAEA General Conference, in Vienna. ABACC participated in the general debates, gave a plenary speech and attended various relevant activities at the Conference. Meetings were held with EURATOM's safeguards director, the chair of KINAC, the IAEA Director General, and officials from the Department of Safeguards. There was also a meeting with Chancellor Diana Mondino and members of the Argentine delegation;



68th IAEA General Conference



Regional Workshop on National Safeguards Inspections

- From 21 to 25 October, in Buenos Aires, ABACC took part in the Regional Workshop on National Safeguards Inspections, organized by the ARN and the DoE's National Nuclear Security Administration (NNSA). Operations and Planning and Evaluation officers presented the SCCC and the relevant aspects of its implementation in Argentina and Brazil. They also supported demonstrations of technologies used by inspectors to verify non-destructive testing of nuclear materials;
- From November 18 to 20, in Vienna, IAEA Board of Governors.



ABACC

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