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

RELATÓRIO ANUAL
INFORME ANUAL
ANNUAL REPORT
2022

ANNUAL REPORT 2022

MESSAGE FROM THE SECRETARY

Marco Marzo
Secretário

It is with great satisfaction that ABACC presents its activity report for the year 2022.

ABACC has diligently and responsibly delivered on its mission to verify that the commitments undertaken by the Agreement for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement) signed between Brazil and Argentina have been fulfilled. Based on all the nuclear material verification activities performed, ABACC concludes that both countries have complied with all the terms of the Bilateral Agreement.

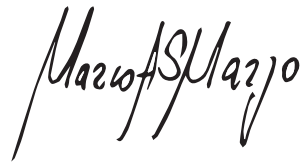
Among the various verification activities carried out, I would like to highlight those related to the transfers of irradiated fuel elements to the new dry storage in Brazil and Argentina. The irradiated fuel element transfer campaign at the Angra 1 Nuclear Power Plant was successfully verified according to established procedures. In view of the high demand in terms of inspection effort, ABACC and the International Atomic Energy Agency (IAEA) have started studies for the development of an unattended monitoring system. Once implemented, this is expected to reduce the need for inspector presence in future transfer campaigns. At the Atucha I Nuclear Power Plant, the first transfers of irradiated fuel elements to the plant's new dry storage were successfully verified using an unattended monitoring system.

This year also saw the resumption of the on-site training courses for inspectors, which are of the utmost importance for maintaining knowledge and training in accounting audit procedures, in the operation of measurement equipment, and in the verification of state-of-the-art containment and surveillance systems.

With regards to the coordination of inspections between ABACC and the IAEA, I would like to emphasize the excellent coordination between the operations areas of the two agencies, which has enabled inspections to be successfully conducted jointly, including unannounced inspections and short notice random inspections.

To crown its 30th anniversary celebration, the book "ABACC - 30 Years of a Pioneering Model" has been published. This details ABACC's activities from the point of view of former and current inspectors and officers.

I would like to emphasize the permanent support and commitment of Argentina and Brazil to ABACC's activities and their provision of the human and financial resources that make its operations possible. I would also like to thank the members of the ABACC Commission for their continued support and interest in the Secretariat, whose staff continues to work with enthusiasm and dedication to successfully fulfill ABACC's mission.



EXECUTIVE SUMMARY

The objective of the Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) is to apply the Common System of Accounting and Control of Nuclear Materials (SCCC), laid down in 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 verification and control criteria and procedures to ensure that nuclear materials are not diverted to the manufacture of nuclear weapons or other explosive nuclear devices.

The ABACC Annual Verification Plan was fully complied with in 2022, with 112 inspections and 59 visits to verify design information at nuclear facilities. In Argentina, there were 90 inspections and visits for the verification of design information at nuclear facilities, with an inspection effort of 195 inspector-days, whereas in Brazil there were 81 inspections and visits for the verification of design information at nuclear facilities, with an inspection effort of 346 inspector-days. The greater inspection effort spent in Brazil is due to the irradiated fuel element transfer campaigns to the recently opened Dry Storage Unit (UAS) at the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA), whose verification required intensive presence of inspectors.

To carry out the verification activities, the Secretariat called on 27 Brazilian inspectors from the 51 available and 27 Argentinian inspectors from the 45 available. During the inspections 636 non-destructive measurements were performed with portable safeguards equipment and 32 samples of nuclear materials were collected and subsequently analyzed in the analytical laboratories that support ABACC for accurate determination of the uranium concentration in the compound and its enrichment.

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

OThe year 2022 also marked the beginning of irradiated fuel element transfers to the newly opened dry storage (ASECQ) at the Atucha I Nuclear Power Plant. It must be noted that the joint ABACC-IAEA approved procedure for the verification of transfers is based on the use of unattended monitoring systems (UMS), minimizing the need for inspectors to be present.

Great effort was devoted to the development of a safeguards approach for the verification of irradiated fuel element transfers at the Almirante Álvaro Alberto Nuclear Power Plant (Angra 1 and Angra 2 Units). Due to the high demand of inspection effort to be applied during transfers, the use of an unattended monitoring system (UMS) is being analyzed. Once implemented, this is expected to reduce the need for inspector presence in future transfer campaigns.

An intense schedule of safeguards implementation coordination meetings with the national authorities of the two countries and with the IAEA was fulfilled, with the holding of 29 bilateral and trilateral coordination meetings. 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 were held: the 20th meeting of the Liaison Sub-Committee was held in May and the 20th meeting of the Liaison Committee was held in November.

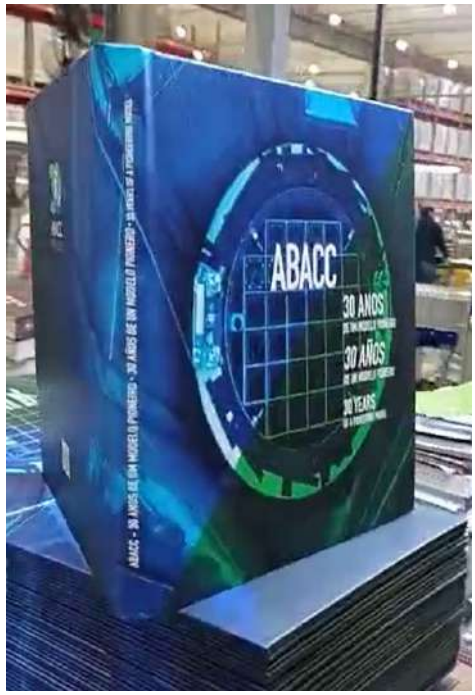
On-site courses, which had been suspended during the COVID-19 pandemic, were once again offered to ABACC inspectors, which covered the following topics: joint ABACC/IAEA accounting audits (18 inspectors trained) and short notice random inspections (15 inspectors trained).

The continuous modernization of the measurement and of the containment and surveillance systems is a permanent priority for the Secretariat. In 2022, a significant investment was made in the acquisition of equipment, instruments and software, which maintains ABACC's state-of-the-art technical capacity in this sector, which is a fundamental factor for the technical credibility of the safeguards conclusions.

ABACC carried out several activities under technical cooperation agreements with the following organizations: Nuclear Regulation Authority (ARN), National Nuclear Energy Commission (CNEN), IAEA, European Atomic Energy Community (EURATOM), European Safeguards Research and Development Association (ESARDA) and the United States Department of Energy (DoE). The participation of ABACC network analytical laboratories in international intercomparison programs organized by the IAEA and the DoE is also worth mentioning. Also noteworthy is the Memorandum of Understanding signed by ABACC and ESARDA to strengthen cooperation in the areas of nuclear material management, inspector training, and cooperation with the IAEA.

We draw attention to the participation of ABACC representatives in a number of congresses, conferences and seminars, in particular the IAEA Safeguards Symposium in Vienna, an event held every four years, where ABACC presented five technical papers. In addition, ABACC participated in the 10th Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, in New York, and made an intervention in the general debate. In parallel to this Conference, ABACC participated, at the invitation of EURATOM, in the event: Safeguarding in a Regional Arrangement – The Euratom and the ABACC Experience.

Finally, as part of ABACC's 30th anniversary celebrations, the book "ABACC - 30 Years of a Pioneering Model" was published and distributed.



1. ABACC

1.1 History and Mission

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

ABACC's mission is to verify that Argentina and Brazil have complied with the commitments laid down in the Bilateral Agreement relative to the exclusively pacific use of nuclear power. In order to fulfill its mission, ABACC applies a bilateral safeguards system named the "Common System for Accounting and Control of Nuclear Materials (SCCC)", which establishes the verification criteria and procedures to be applied to all nuclear materials in all nuclear activities in both countries, thus guaranteeing the timely detection of possible diversions of these materials towards the manufacture of nuclear weapons.

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

1991

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

1992

Start of ABACC's activities and first inspections carried out

Inauguration of ABACC's headquarters in Rio de Janeiro

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

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)

1994

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

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

First Joint Inspections with the IAEA

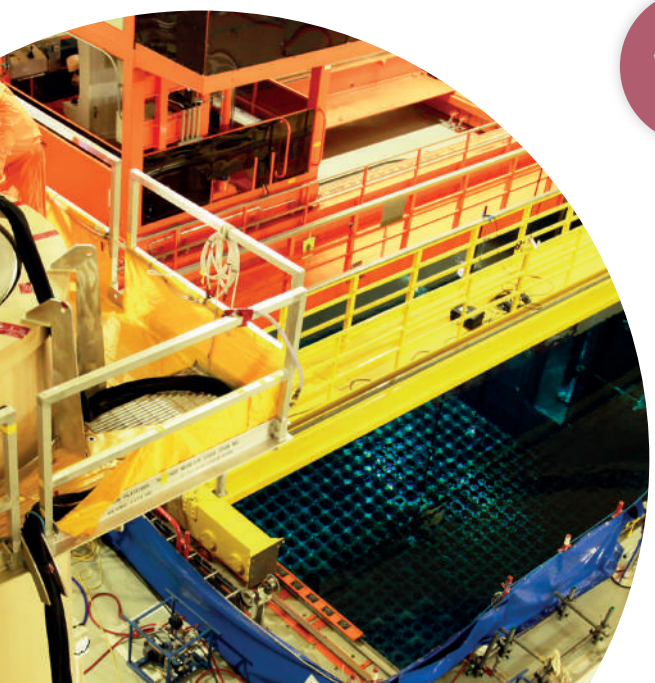
Cooperation Agreement with the United States Department of Energy

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 UF_6 sampling method using alumina pellets (ABACC-Cristallini Method)

2007

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

2006

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

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

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

ABACCC 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

2008

Start of the Short Notice Random Inspection (SNRI) program at the conversion and fabrication facilities in Argentina and Brazil

2000 inspections

2009

ABACCC completes 2000 inspections

2013

Launch of the cooperation project between ABACC and the European Commission for safeguards application technologies

2016

Start of the process to modernize the surveillance systems with "*Next Generation Surveillance Systems*" to be jointly used by ABACC and IAEA

Successful conclusion of the ABACC-Cristallini Method international validation program by excellent laboratories in Argentina, Brazil, Germany, Belgium, France and the IAEA

2017

Introduction of the remote transmission system to the ABACC headquarters, showing the State of Health (SoH) of the surveillance systems and other components used in safeguarding in facilities in Brazil and Argentina

2018

Start of the development of the New Software for Joint Auditing of Records (NSJAR) by ABACC

ABACCC completes 3000 inspections

3000 inspections

Start of Transfers of Irradiated Fuel Elements to the dry storage at the Angra and Atucha Nuclear Power Plants

2022

Signature of a Memorandum of Understanding between ABACC and ESARDA

First joint remote certification of jointly used surveillance camera by ABACC and IAEA

2021

First Committee of the United Nations General Assembly's approval, by consensus, recognizing ABACC's significant contribution towards international non-proliferation and nuclear disarmament

30 years of application of the SCCC

ABACC fulfilled 100% of its Annual Verification Plan in spite of the restrictions and difficulties caused by the COVID-19 pandemic

2020

Start of the joint use of NSJAR by ABACC and IAEA

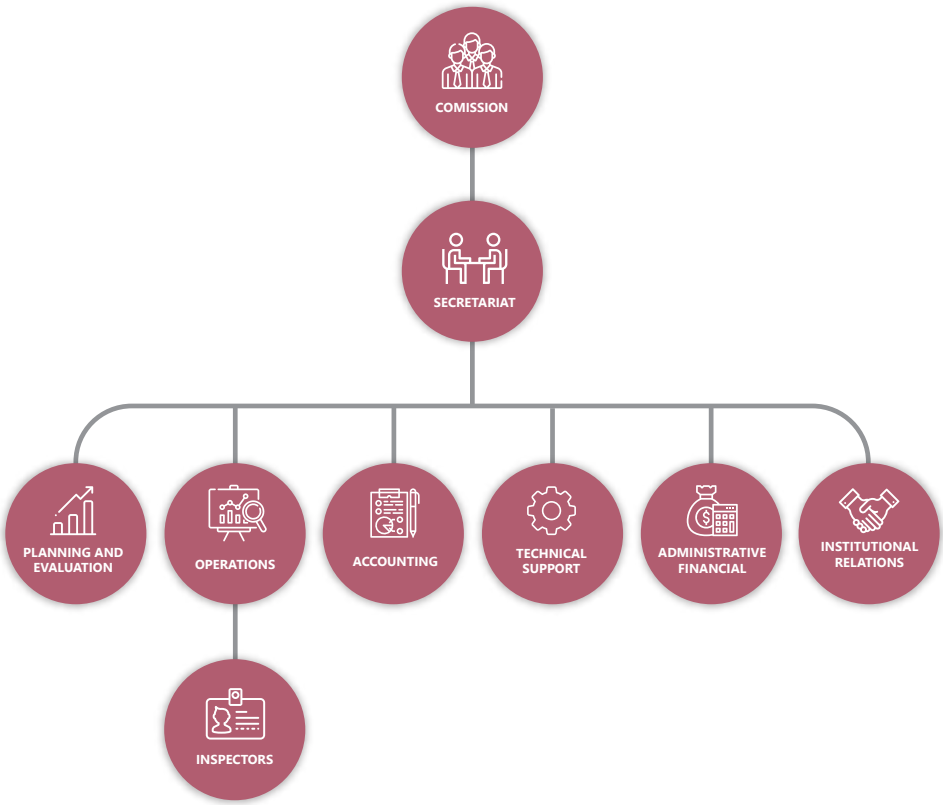
Certification of the ABACC-Cristallini Method for UF_6 sampling by the American Society for Testing and Materials (ASTM International)

2019

ABACC is selected as one of the relevant institutions for training United Nations Office for Disarmament Affairs - UNODA scholarship holders – the first such visit to ABACC

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 composed of four members with two nominated by each country.

The Secretariat, which is ABACC's executive body, is composed of twelve officers, 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, technician and auxiliary staff support the routine activities that are necessary for the smooth running of the Secretariat.

The inspectors, nominated by the respective countries and appointed by the ABACC Commission, are not full-time employees of the agency, but are called for specific inspection missions, during which they are considered to be employees. The inspectors are employees of the nuclear industry in the two countries, which enables them to carry out inspections more effectively. Inspectors from Argentina carry out inspections at the Brazilian facilities and inspectors from Brazil at the Argentinian facilities.

2. ATIVIDADES DE VERIFICAÇÃO DA ABACC

The chart below presents the facilities subjected to verification by ABACC.

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.)	29	10*	39
TOTAL	**51**	**25**	**76**

* One under construction

The table below shows the verification activities performed between January 1, 2022 and December 31, 2022

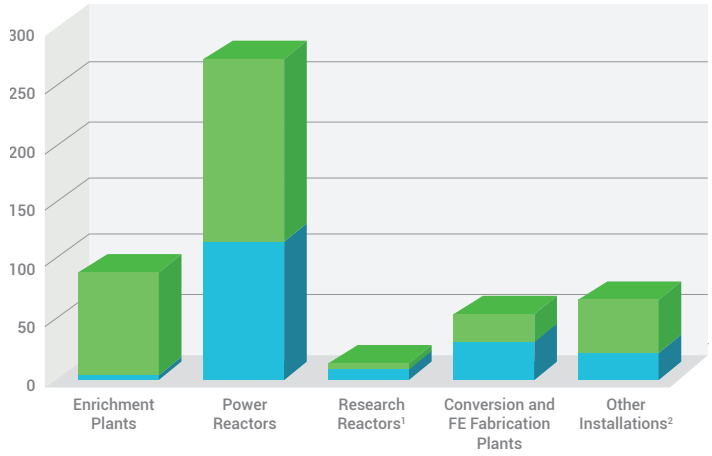
TYPE OF ACTIVITY	ARGENTINA	BRAZIL	TOTAL
Physical Inventory Verification (PIV)	33	18	**51**
Interim inspections (II), including random short notice inspections (SNRI)	18	29	**47**
Unannounced inspections (UI)	0	14	**14**
Verification of information from the Technical Questionnaires (DIV)	39	20	**59**
TOTAL	**90**	**81**	**171**
Inspection effort (inspector-days)	195	346	**541**
Availability (inspector-days)	463	706	**1169**

During the inspections, as well as carrying out 636 non-destructive tests and 127 weighings, a total of 32 samples of nuclear material were collected in Argentina and Brazil to determine the element uranium and the U-235 isotope in the ABACC network analytical laboratories. Furthermore, a total of 46 environmental samples were collected in the two countries to be analyzed for uranium particles.

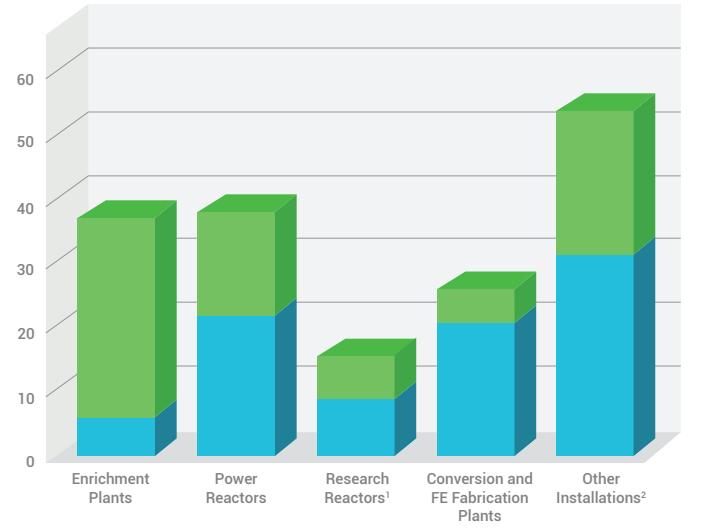
To control the nuclear material at the two countries' facilities, approximately 1200 seals have been applied and 69 ABACC surveillance cameras have been used. Thirteen technical missions for the installation and/or preventive or corrective maintenance of measuring equipment and containment and surveillance systems have been carried out.

The following charts show the verification effort and number of inspections performed per type of facility. It is worth noting that nuclear power reactors are the ones requiring the highest inspection effort in Brazil, due to the transfers of spent fuel elements from the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA) – Unit 2 to the CNAAA Complementary Dry Storage Unit (UAS), followed by the uranium enrichment plants. On the other hand, in Argentina most of the effort takes place in the power reactors and the conversion and fabrication plants.

VERIFICATION EFFORT BY TYPE OF FACILITY (INSPECTORS X DAYS) - 2022



VERIFICATION ACTIVITIES BY TYPE OF FACILITY - 2022



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

520 accounting reports received from Argentina and Brazil were processed, and 95 accounting audits were carried out at nuclear facilities. At the end of 2022, the value of the total inventory of material in the two countries showed an increase of 3.3% in significant quantities compared to the previous year.

The first transfers of irradiated fuel elements from the Atucha I Nuclear Power Plant to the dry storage (ASECQ) were carried out in a totally unattended manner (Unattended Monitoring System - UMS).

The campaign to transfer irradiated fuel elements from the Angra 1 Nuclear Power Plant to the Complementary Dry Storage Unit (UAS) at the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA) has been successfully concluded. Verification of these transfers demanded an inspection effort of 142 inspector-days in the field. To maintain continuity of knowledge of previously verified fuels, containment and surveillance equipment, and radiation detection equipment were used.

3. COORDINATION OF ACTIVITIES WITH THE IAEA

In accordance with the provisions set out in the Agreement between the Republic of Argentina, the Federative Republic of Brazil, the Brazilian-Argentina Agency for Accounting and Control of Nuclear Materials and the International Atomic Energy Agency for the Application of Safeguards – 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 approaches and inspection procedures for the facilities subject to SCCC and IAEA safeguards, which contribute to the optimization and effectiveness of the respective safeguards.

In 2022, ABACC and the IAEA held a total of seventeen technical meetings, bilaterally and with the respective national authorities, to discuss specific issues on the implementation of safeguards in the facilities in both countries.

As provided for in the Quadripartite Agreement, the 20th meeting of the Liaison Committee was held in Brazil, preceded by the 20th meeting of the Sub-Committee held at ABACC headquarters. The 36th Coordination meeting between ABACC and the IAEA was also held. These meetings are held annually, to assess the status of safeguards implementation and to improve the verification activities of nuclear materials and facilities.

4. COORDINATION OF ACTIVITIES WITH ARGENTINA AND BRAZIL

According to the terms set out in the Agreement between the Republic of Argentina and the Federative Republic of Brazil for the exclusively peaceful use of nuclear energy - the Bilateral Agreement – the two countries cooperate with ABACC for the satisfactory accomplishment of its mission.

In 2022, twelve technical meetings were held with national authorities to discuss specific issues concerning the application of safeguards in facilities in both countries, including coordination meetings within the framework of the Quadripartite Agreement.

It is also important to highlight the cooperation of both countries as per providing design information and the necessary actions for the development of safeguards and verification approaches and procedures, technical cooperation for testing equipment and new technologies, as well as technical support in the fields of destructive and non-destructive assays.

5. 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.

5.1 Technical Cooperation with the IAEA

Participation in the sessions of the Safeguards Member State Support Programme Biennial Coordinators' Meeting.

Continued interaction with the IAEA for carrying out the NMRORO2022 (IAEA 2022 Nuclear Material Round Robin Proficiency Test) with the network's analytical laboratories.

Performed 20 NGSS cameras joint certification - NGSS (New Generation Surveillance System).

Continued monitoring of the activities for the implementation of the "ABACC-Cristallini" Method for UF_6 sampling in conversion and enrichment facilities, including actions for the IAEA approval for its routine use.

5.2 Technical Cooperation with the US Department of Energy (DoE)

The 24th Meeting of the Permanent Coordinating Group (PCG) ABACC-NBL

The 24th Meeting of the Permanent Coordinating Group (PCG) was held, dealing with proficiency exercises of the ABACC network laboratories within the framework of the ABACC-NBL (New Brunswick Laboratory) cooperation amongst other things..

5.3 ABACC – EURATOM/European Community Cooperation

A meeting was held with the EURATOM safeguards directorate, with a view to identifying technical areas of mutual interest for cooperation..

Preparation of a joint article on cooperation between both bodies and the relevance of regional and international cooperation in the application of safeguards.

Participation of ABACC, at the invitation of EURATOM, at the event "Safeguarding in a Regional Arrangement - The EURATOM and the ABACC Experience", held parallel to the 10th Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

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

Signing of a Memorandum of Understanding (MoU) for cooperation between the two institutions on issues of mutual interest in promoting and improving the quality, effectiveness and efficiency of implementing nuclear safeguards. Areas of cooperation include nuclear safeguards, nuclear materials management, concepts and technologies, analytical capacity building, safeguards training, and cooperation with the IAEA.

6. TRAINING

Training courses for inspectors contribute to ABACC maintaining the high level of effectiveness of its inspections. The following training courses were held in 2022.

ABACC/IAEA Joint Accounting Audit

- ABACC / IAEA Joint Accounting Audit, held from May 3 - 6 at the ABACC office in Buenos Aires. Nine Argentinian inspectors from ABACC participated, along with two employees from the office in Buenos Aires, who support the verification activities.

ABACC/AIEA Joint Accounting Audit

- ABACC/AIEA Joint Accounting Audit, held from May 24 - 27 at ABACC's headquarters. Nine Brazilian inspectors from ABACC participated.

Short Notice Random Inspection Procedures (SNRI) in Manufacturing Plants in Buenos Aires

- Short Notice Random Inspection Procedures (SNRI) in Manufacturing Plants, September 26 - 29, in Buenos Aires. This course had theoretical and practical classes, with three instructors from ABACC and one from IAEA. Eight Brazilian inspectors participated.

Short Notice Random Inspection Procedures (SNRI) in Manufacturing Plants in Rio de Janeiro

- Short Notice Random Inspection Procedures (SNRI) in Manufacturing Plants, December 5 - 8, in Resende and in Rio de Janeiro. The practical part of the training course was conducted at the Nuclear Fuel Factory (FCN/INB). The course had theoretical and practical classes, with three instructors from ABACC and one from IAEA. Seven Argentinian inspectors participated.

It is worth mentioning that as part of the training program, an Argentinian inspector in training (trainee) participated in a Physical Inventory Verification (PIV) at the Nuclear Fuel Factory - FCN, in Resende, as well as a Brazilian inspector also in the condition of trainee, who participated in PIV type inspections in Argentina.

At the request of the Naval Agency for Nuclear Safety and Quality (AgNSNQ), ABACC put on a Nuclear Safeguards Course for six representatives of that Agency, from March 8 - 10, at ABACC's headquarters. The course covered basic safeguards concepts and presentation of the main non-destructive measurement instruments and containment and surveillance equipment.

7. INSTITUTIONAL ACTIVITIES

In 2019, ABACC was included, for the first time, in the agenda of the United Nations Disarmament Fellowship Program, launched by the United Nations General Assembly in 1978. In 2022 the fellows' visit, which had been suspended since 2020 due to the COVID-19 pandemic, was resumed. This year in Buenos Aires, 24 fellows of different nationalities had lectures on the history of the trust-building relationship between Argentina and Brazil, which led the two countries to establish ABACC, the dynamics of the SCCC's operation and the inspection activities. Also, a virtual visit was carried out to the technical units of ABACC and a in person visit to the ATUCHA Nuclear Complex and the CAREM Project in Buenos Aires, Argentina.

UNODA - United Nations Disarmament Fellowship Program

Visit of the students from the Diplomatic Training Course at the Rio Branco Institute to ABACC

ABACC also received 28 students from the Diplomacy Training Course of the Rio Branco Institute (Class of 2021 - 2023), to learn about the origins, development, structure and activities carried out by ABACC. .

ABACC's participation in international forums contributes to the dissemination of its activities and the exchange of information and experiences with representatives of other organizations.

ABACC participated, virtually, in the 44th Annual Meeting of ESARDA (European Safeguards Research and Development Association), from May 2 - 5. The ABACC Secretary delivered a few words at the opening session of the meeting. ABACC officers participated virtually in technical working groups related to the application of safeguards.

- INMM 63rd Annual Meeting (virtual), from July 24 - 28, where the paper "Destructive Analysis of Nuclear Materials at ABACC: Current Status and Future Steps" was presented, and
- Meeting of the INMM "International Safeguards Division" on July 29, where ABACC's activities in the period since the last meeting in 2021 were highlighted.
- Regional Workshop on Field Verification Activities by IAEA, hosted in virtual mode by US-DoE/NNSA September 19 - 23. ABACC's Operations officers participated in the panel called "Preparation for IAEA Inspections", held on September 21.

Safeguards Symposium organized by the International Atomic Energy Agency (IAEA)

- Safeguards Symposium, organized by the International Atomic Energy Agency (IAEA), from October 31 to November 4, with the presentation of the following own and co-authored works with EURATOM and Argentina:

  i) ABACC and EURATOM: A Reflection for the Past and Future Cooperation between Regional Safeguards Organizations;
  ii) Safeguards Implementation by ABACC during the Covid-19 Pandemic;
  iii) Destructive Analysis of Nuclear Materials at ABACC: Current Status and Future Steps;
  iv) Implementation of a Graphical Data Analysis and Review Software for State of Health (SoH). Remotely Transmitted Data from Containment and Surveillance Safeguards Systems Applied to Nuclear Power Reactors in Brazil and Argentina;
  v) Early Conception of An Unattended Monitoring System for Spent Fuel Transfers to Dry Storage at Atucha I Nuclear Power Plant.

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

- Celebration of the 60th Anniversary of the Institute of Nuclear Engineering (IEN/CNEN), May 6, Rio de Janeiro.

Course on Statistical Concepts Applied to Safeguards held by the National Nuclear Security Administration (NNSA)

- Course on Statistical Concepts Applied to Safeguards, held by the National Nuclear Security Administration (NNSA), through a Technical Cooperation Agreement on the Control of Nuclear Material with CNEN, March 14 - 18, Rio de Janeiro. The Brazilian Operations Officer was part of the team of instructors.

IAEA Board of Governors, in Vienna

- IAEA Board of Governors, June 6 - 10, Vienna. On that occasion, the Secretaries met with the IAEA Director General, Rafael Mariano Grossi.
- United States Department of Energy Seminar: Women in Nuclear Global (WiN Global) and the Latin America and Caribbean section (WiN ARCAL), virtual, organized by the National Nuclear Security Administration (DoE/NNSA), June 14.

- A talk by the Secretary, by invitation, at the Brazilian School of Nuclear Physics Security, an event held by the Nuclear and Energy Research Institute (IPEN/CNEN) in cooperation with the IAEA, through its International Nuclear Security Education Network (INSEN) program, June 22, São Paulo.
- Annual Symposium of the Latin American Section of the "American Nuclear Society" LAS/ANS 2022 "Nuclear technologies contributing to sustainability", June 20 – 22, Ro de Janeiro.

Annual Symposium of the Latin American Section of the American Nuclear Society - LAS/ANS 2022

- 10th Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), held in New York, USA, August 1 - 26. Two ABACC representatives attended the meetings of the Main Committees, and an intervention was made in the general debate. Furthermore, in parallel to the Conference, ABACC was invited by EURATOM to participate in the event "Safeguarding in a Regional Arrangement – The EURATOM and the ABACC Experience".

10th Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

- Third Meeting of the Working Committee of the Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction, September 6 - 8, in New York. An ABACC Operations officer was invited by the United Nations Office for Disarmament Affairs (UNODA) to give a presentation on the ABACC and SCCC Model.
- IAEA Board of Governors, September 12 - 16, Vienna.

- 66th IAEA General Conference, September 26 - 30, Vienna. On this occasion, ABACC participated in the general debates, gave an intervention at the plenary session and attended several relevant activities at the Conference. Meetings were held with EURATOM, the IAEA Director General, and representatives of the Safeguards Department's B Operations Division.

66th IAEA General Conference, in Vienna

LIST OF ABBREVIATIONS

ABACC	Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials
AgNSNQ	Naval Agency for Nuclear Safety and Quality
ARN	Nuclear Regulation Authority
ASECQ	Dry Storage
CNAAA	Almirante Álvaro Alberto Nuclear Power Plant
CNEN	National Nuclear Energy Commission
DoE	United States Department of Energy
ESARDA	European Safeguards Research & Development Association
EURATOM	European Atomic Energy Community
FCN/INB	Nuclear Fuel Factory/Nuclear Industries of Brazil
IAEA	International Atomic Energy Agency
INMM	Institute of Nuclear Materials Management
INSEN	International Nuclear Security Education Network
IPEN	Nuclear and Energy Research Institute
NBL	New Brunswick Laboratory
NGSS	New Generation Surveillance System
NMRORO	Nuclear Material Round Robin
NNSA	National Nuclear Security Administration
OPANAL	Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
PCG	Permanent Coordinating Group
PIV	Physical Inventory Verification
SCCC	Common System for Nuclear Materials Accounting and Control

SJAR	Software for Joint Auditing of Records
SNRI	Short Notice Random Inspection
SoH	State of Health
TNP	Treaty on the Non-Proliferation of Nuclear Weapons
UAS	Complementary Dry Radiation Fuel Storage Unit
UMS	Unattended Monitoring Systems
WIN	Women in Nuclear

IMPRESSO

ABACC

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