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

RELATÓRIO ANUAL
INFORME ANUAL
ANNUAL REPORT
2020

ANNUAL REPORT 2020

MESSAGE FROM THE SECRETARY

Marco Marzo
Secretary

It is with great pleasure that I present the Annual Report of the Activities of the Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) for 2020.

This Report complies with the provisions of Article XI, paragraph I, of the Agreement between the Republic of Argentina and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy (Bilateral Agreement) and Article 16, paragraph H, of the Regulations of the ABACC Secretariat.

The situation of the Corona Virus Disease 2019 that afflicted the world in 2020 posed a huge challenge for ABACC to fulfill its institutional mission. Nevertheless, in line with the Commission´s guidance, the Secretariat made its best efforts to continue developing its activities, even under extraordinary circumstances. Thus, I am pleased to report that the Annual Verification Plan has been fully complied with. As a result of the verification and assessment activities carried out based on 114 inspections and 70 technical visits to verify the design information at nuclear facilities, ABACC concludes that both countries have complied with all the terms of the Bilateral Agreement.

Considering that the face-to-face activities at ABACC's headquarters were restricted to the essential ones, and in order to enable an efficient and effective work of the employees in home office regime, the access to ABACC's Information Technology infrastructure was routinely made through a virtual private network (VPN) meeting all the security requirements defined in the ABACC's Information Security Policy.

All logistics problems arising from the access and mobility restrictions caused by the pandemic could be solved, even though with great difficulty many times, by the combination of two factors: the professionalism and dedication of all the staff and inspectors and the support of the National Authorities and Ministries of Foreign Affairs of the two countries, to whom I would like to express here my acknowledgement and gratitude.

Also noteworthy is the excellent coordination of activities with the International Atomic Energy Agency (IAEA) for the implementation of the Quadripartite Agreement, which allowed the joint activities of the two agencies to be carried out with great efficiency under the given circumstances.

In the accounting data processing area, two facts are worth noting: the new Nuclear Material Accounting Data System has been completed and made operational, thereby replacing the old system that had been in operation since the early 1990s; and the New Joint Auditing System for Accounting Records (NSJAR), which was developed by ABACC and is the only existing joint auditing system in the world, started being used for inspections on a routine basis by ABACC and the IAEA.

Fortunately, the construction of new nuclear facilities in both countries continues to progress and has been the subject of great effort by the Secretariat to develop safeguards approaches. We highlight the safeguards approaches for two dry storage facilities of irradiated fuel elements under construction, respectively, at the Atucha Nuclear Power Plant and at the Admiral Álvaro Alberto Nuclear Power Plant, which are expected to come into operation in 2021. ABACC has practically concluded, in coordination with the IAEA, the development of the two approaches, which cover both the verification of irradiated fuel elements transfers from the reactor pools to the storage units, as well as their containment and immobilization.

Finally, I would like to thank all members of the Commission for the continued support and interest provided to the Secretariat, whose staff continue to work with enthusiasm and dedication to well fulfill ABACC's mission.

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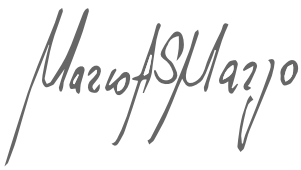

EXECUTIVE SUMMARY

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

In 2020, ABACC performed and evaluated 114 Inspections at nuclear facilities in both countries and undertook 70 technical visits to verify the design information of nuclear installations.

The safeguards procedures for verifying the transfer of fuel elements to the dry storages of the Atucha I Nuclear Power Plant and the Admiral Álvaro Alberto Nuclear Power Plant were defined, in coordination with the International Atomic Energy Agency (IAEA).

The new Nuclear Materials Accounting Data System was completed and the New Joint Auditing System for Accounting Records (NSJAR) started being used for inspections on a routine basis by ABACC and the IAEA.

Finally, it is worth highlighting the progress in the implementation of ABACC's information security policy with the acquisition of hardware authentication devices for use as a second authentication factor, and also of high performance data storage systems with redundant systems to increase the availability and security of the information technology infrastructure.

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1. ABACC

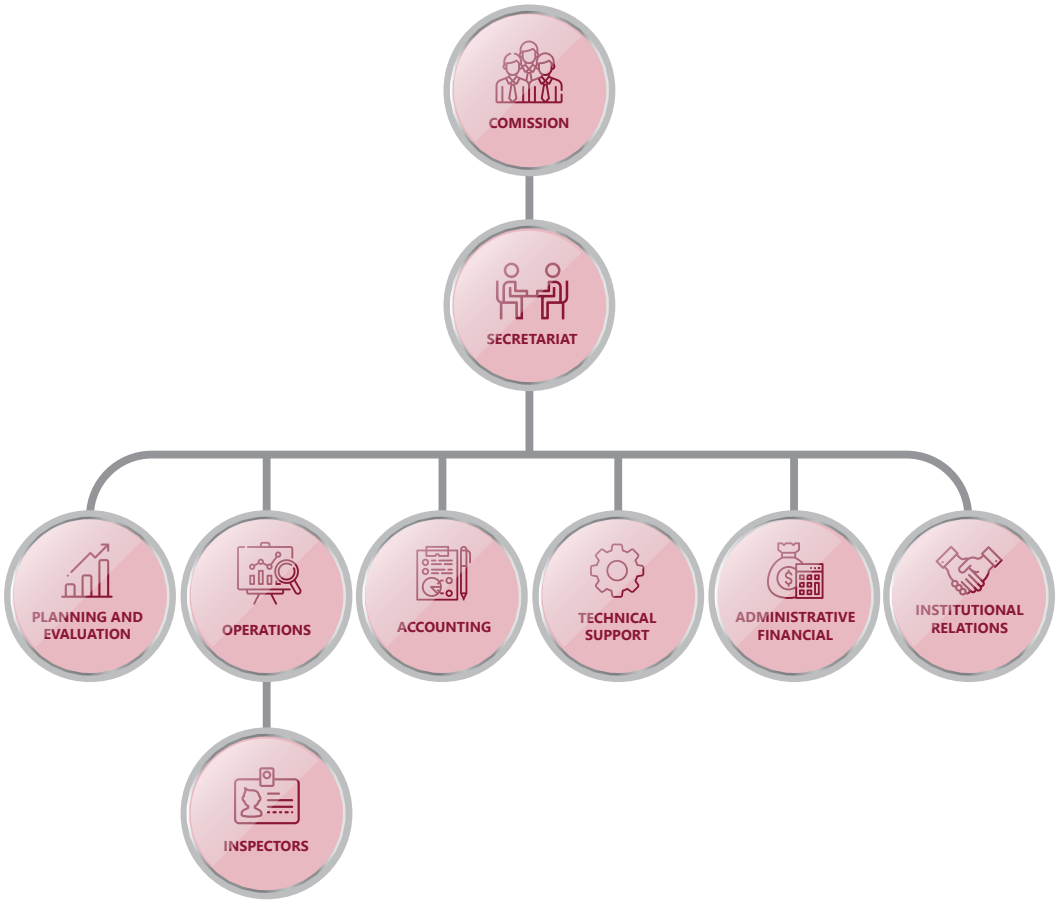
1.1 History and Mission

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 12th 1991, after being approved by the National Congress of each country.

ABACC's mission is to verify that Argentina and Brazil have complied with the commitments laid down in the Bilateral Agreement. In order to fulfill its mission, ABACC applies a bilateral safeguards system named the "Common System of 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 ability to timely detect possible diversions of these materials for the manufacture of nuclear weapons.

1.2 Organization Chart

ABACC's organizational chart is shown below.



The Commission, which is ABACC's policy making organ, is composed of four members, two nominated by each country.

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

Eight administrative and auxiliary employees support the routine activities that are necessary for the good functioning of the Secretariat.

In 2020, there were 46 Argentinean and 49 Brazilian ABACC inspectors, who had been appointed by the respective countries. Inspectors from Argentina carry out inspections at the Brazilian facilities and inspectors from Brazil at the Argentinean facilities. Inspectors are considered ABACC Secretariat staff during the safeguards missions for which they are called.

2. ABACC'S VERIFICATION ACTIVITIES

The chart below presents the installations subject 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.)	28	10*	38
TOTAL	**50**	**25**	**75**

* Uma em construção

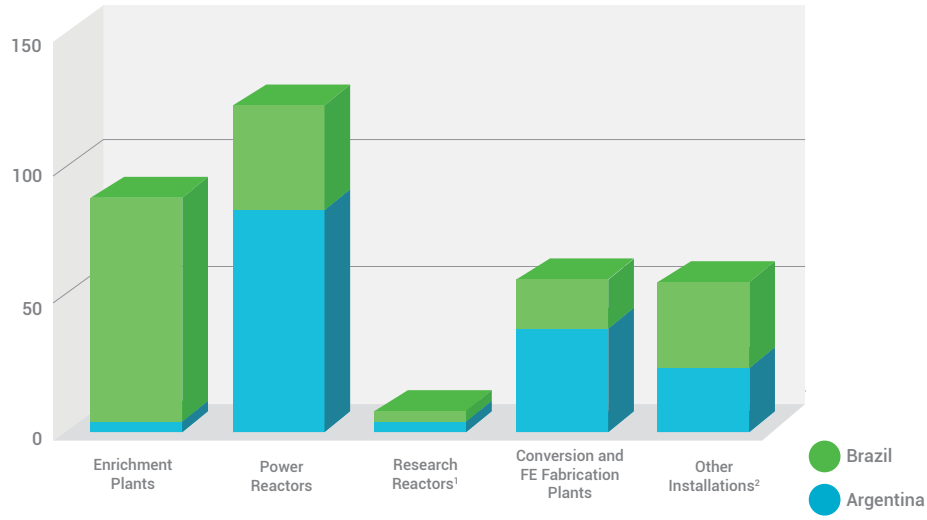
In 2020, ABACC performed 114 inspections in nuclear installations in both countries and 70 visits to verify the design information of nuclear facilities. The inspections effort required a total of 889 inspector-days, made up of in-field activities and pre- and post-inspection activities.

During the inspections, as well as carrying out 650 non-destructive measurements and 177 weighing, a total of 34 samples of nuclear material were collected in Argentina and Brazil to determine the element uranium and the U-235 isotope in the ABACC network laboratories. Furthermore, 38 environmental swipe samples were taken to be analyzed for uranium particles.

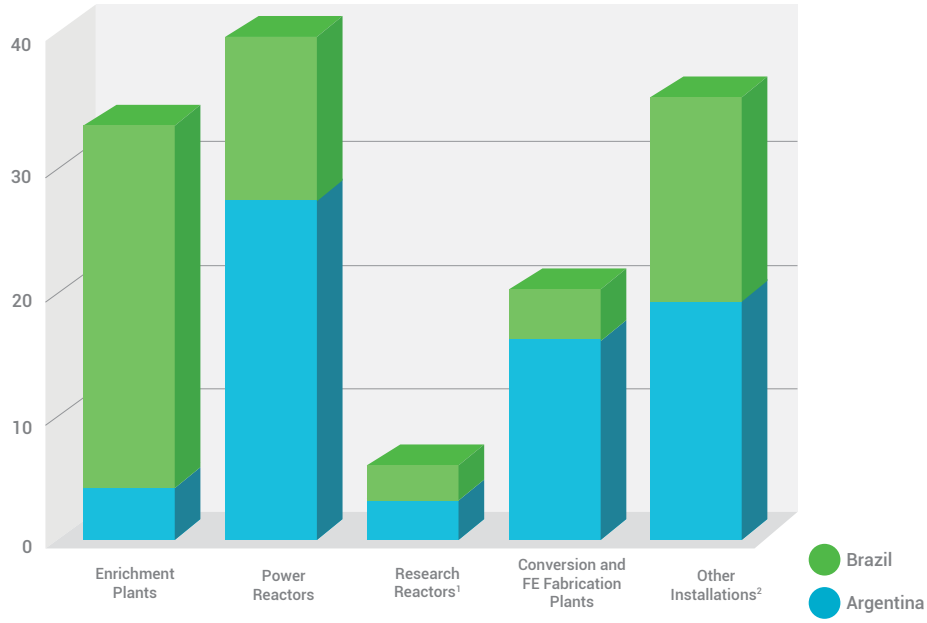
To control the nuclear material at the two countries' installations, a total of 805 seals have been applied and 34 ABACC surveillance cameras used.

The following charts show the verification effort and the number of inspections performed by type of facility. It is worth noting that uranium enrichment plants are the ones requiring the highest inspection effort in Brazil, while 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)



NUMBER OF INSPECTIONS BY TYPE OF FACILITY



1. Inclui Unidades Críticas e Subcríticas
2. Inclui Laboratórios, Depósitos, P&D, Produção de Radioisótopos, etc.

Nine technical missions were carried out for the installation and the preventive or corrective maintenance of measurement equipment, as well as the containment and surveillance systems. Two new High Purity Germanium (HPGe) detectors with high resolution for uranium enrichment measurements have been put into operation at the Nuclear Fuel Plant (FCN) and at the Brazilian Navy Technology Center (CTMSP).

The locations and requirements for the installation of surveillance cameras to be used during the transfer of irradiated fuel assemblies to the Dry Storage Unit of the Admiral Álvaro Alberto Nuclear Power Plant were defined.

497 accounting reports received from Argentina and Brazil were processed, and 90 accounting audits were carried out in nuclear facilities. At the end of 2020, the total inventory of material in the two countries registered an increase of 3.7% over the previous year.

The modernization of the Central Nuclear Materials Accounting System (SCCMN) was is completed. This new system is already in routine operation and replaces the old system developed in the mid-1990s.

The New Joint Auditing System for Accounting Records (NSJAR) for conducting the ABACC-IAEA joint accounting audits was approved for routine use in inspections.

It is important to highlight that all logistics problems arising from the access and mobility restrictions caused by the pandemic could be solved, even though with great difficulty many times, by the combination of two factors: the professionalism and dedication of all employees and inspectors and the support of the National Authorities and Ministries of Foreign Affairs of the two countries. These factors enabled ABACC to carry out all the inspections and verifications necessary to fulfill its mission

3. COORDINATION OF ACTIVITIES WITH THE IAEA

According to the terms set out in the Agreement between the Republic of Argentina and the Federative Republic of Brazil, ABACC and the International Atomic Energy Agency (IAEA) 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. With this aim, ABACC and the IAEA share containment, surveillance, detection and measurement systems under the concept of "joint use" and develop joint approaches and inspection procedures for the installations submitted to the SCCC, which contribute to optimizing the effectiveness of the respective safeguards. In 2020, ABACC and the IAEA held six virtual bilateral technical meetings with the national authorities to discuss specific issues on the implementation of safeguards in facilities of both countries.

As laid down in the Quadripartite Agreement, the 19th meeting of the Liaison Sub-Committee and the 34th Coordination Meeting between ABACC and IAEA were held on September 23rd and September 30th, respectively. These meetings take place annually, in order to assess the status of the implementation of safeguards and to improve the verification activities for 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 - the Bilateral Agreement – the two countries cooperate with ABACC for the satisfactory accomplishment of its mission.

The situation arising from the Corona Virus Disease 2019 required a continuous coordination of activities with the national authorities of Argentina and Brazil. In 2020, six virtual technical meetings were held with the national authorities of Brazil and Argentina to discuss specific issues on the implementation of safeguards at installations of both countries, including coordination meetings within the framework of the Quadripartite Agreement.

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

5. TECHNICAL COOPERATION

Cooperation with institutions which work in the area of nuclear safeguards is relevant for the exchange of information on safeguards 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. Despite the Corona Virus Disease 2019 situation, interaction with institutions was maintained through virtual technical meetings, highlighting:

5.1 Technical Cooperation with the IAEA

Interaction with the IAEA technical sector linked to the IAEA's destructive analysis intercomparison exercises (NMRORO), in which ABACC's laboratory network discusses statistical methods of safeguards.

Active participation of the analysis working group in the IAEA's "International Target Values" (ITV 2020), for destructive and non-destructive assays.

As part of their cooperation with the IAEA, Argentina and Brazil have continued with the follow-up activities for the implementation of the "ABACC-Cristallini" Method for UF_6 sampling in conversion and enrichment facilities, including the actions to obtain the IAEA approval for routine use of the method.

5.2 Technical Cooperation with the Department of Energy (DoE)

A review of several actions was started in the areas of personnel training and performance assessment of the network of laboratories in Argentina and Brazil, which perform destructive analysis of nuclear material for ABACC

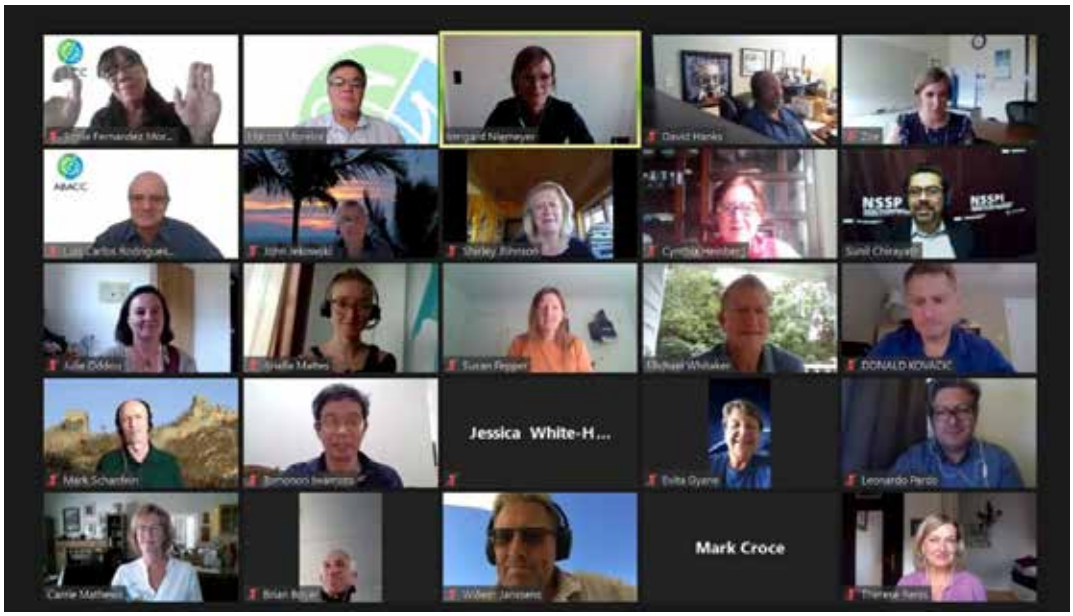
5.3 Cooperation ABACC –EURATOM/European Community

At the opening session of the virtual meeting of the Steering Committee of the European Research and Development Association (ESARDA), the Secretary of ABACC was invited to present ABACC's activities in the context of the preparation of a Memorandum of Understanding (MoU) to be signed between ABACC and ESARDA.

6. INSTITUTIONAL ACTIVITIES

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

ABACC officers participated in the following events, where they presented technical papers on:



61st Annual Meeting of the Institute of Nuclear Materials Management (INMM)

- "Laser Curtain for Containment Advanced Technology: Testing for Dual Use as a Component at Spent Fuel Dry Storage in Atucha NPP", 61st Annual Meeting of the Institute of Nuclear Materials Management (INMM) (virtual), July.
- "Safeguards Measures to Monitor Spent Fuel Transfers from Nuclear Power Plants to Dry Storage in Argentina and Brazil", 61st Annual Meeting of the Institute of Nuclear Materials Management (INMM) (virtual), July.

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

- Commemoration of the 2nd Anniversary of the Naval Agency for Nuclear Safety and Quality, on February 5th, in Rio de Janeiro.
- IAEA Board of Governors Meeting, March 9-12, Vienna.
- Seminar on "*Gender Perspectives on Arms Control and Disarmament in Latin America and the Caribbean*", organized by UNIDIR, March 26-27.
- "*Informal Workshop on Good Practices and Lessons Learned with Respect to the Existing Nuclear-Weapon-Free Zones* (Virtual)", organized by the United Nations Office for Disarmament Affairs – UNODA, July 7-9.

2nd Anniversary of the Naval Agency

IAEA Board of Governors Meeting

Informal Workshop on Good Practices and Lessons Learned with Respect to the Existing Nuclear-Weapon-Free Zones

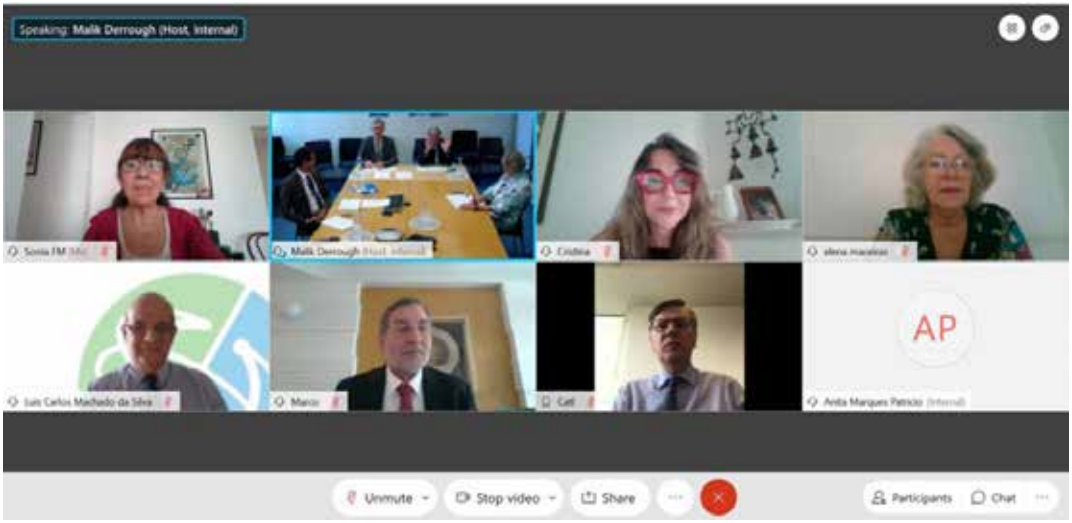
Meeting of the Committee on Nuclear Affairs of the Argentine Council on International Relations (CARI)

64th IAEA General Conference (GC)

Meeting between ABACC officers and the IAEA Director General

- Meeting of the Committee on Nuclear Affairs of the Argentine Council on International Relations (CARI), virtual, on September 1st.
- 64th IAEA General Conference (GC), September 21-25, Vienna. The Secretary made a virtual speech at the plenary session, highlighting the activities carried out by ABACC in face of the Corona Virus Disease 2019.
- Virtual Side Event: "A Global Voice on Gender Equality in Nuclear: the role of the IAEA", in which participated the Deputy Secretary, the IAEA General Director, Rafael Mariano Grossi, and the Professor of Nuclear Physics at the Faculty of Science of the Mohammed V University of Rabat, Rajaâ Cherkaoui El Moursli, on September 23rd.
- Meeting between ABACC representatives and the IAEA Director General, Rafael Mariano Grossi, to address issues of common interest to both agencies, on October 1st.
- Virtual activities in celebration of CNEN's 64th anniversary, on October 10th.
- IX International Seminar of Nuclear Energy (SIEN – 2020), virtual, on October 30th.
- "4th International Technical Meeting on Statistical Methodologies for Safeguards", virtual, organized by IAEA, November 2-6.
- Signing Ceremony for the Approval of the Foundations for the Preliminary Design of the Conventional Submarine with Nuclear Propulsion, at the Steel Structures Manufacturing Unit (UFEM), on November 13th, in Itaguai.

- 42nd Annual Meeting (virtual) of the European Safeguards Research and Development Association – ESARDA, November 16-19.
- Annual Symposium of the Latin American Section of the American Nuclear Society (LAN/ANS), virtual, November 24-26.
- "Workshop on Nuclear Disarmament Verification (virtual)", organized by NPS Global Foundation and by London-based Verification Research, Training and Information Centre (VERTIC), on December 15th.



Meeting between ABACC officers and the IAEA Director General

LISTA DE ABREVIATURAS

ABACC	Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials
CARI	Committee on Nuclear Subjects of the Argentine Council on International Relations
CNEN	National Nuclear Energy Commission
COVID-19	Corona Virus Disease 2019
CTMSP	Brazilian Navy Technological Center in São Paulo
DoE	United States Department of Energy
ESARDA	European Safeguards Research & Development Association
EURATOM	European Atomic Energy Committee
FCN	Nuclear Fuel Plant
GC	General Conference
HPGe	High Purity Germanium
IAEA	International Atomic Energy Agency
INMM	Institute of Nuclear Materials Management
ITV	International Target Value
LAS/ANS	Latin American Section of the America Nuclear Society
MoU	Memorandum of Understanding
NMRORO	Nuclear Material Round Robin
NPS Global	Nonproliferation for Global Security Foundation
NSJAR	New Joint Auditing System for Accounting Records
SCCC	Common System of Accounting and Control of Nuclear Materials
SCCM	Central System for Accounting of Nuclear Materials
SIEN	International Seminar of Nuclear Energy

UFEM	Steel Structures Manufacturing Unit
UF_6	Uranium Hexafluoride
UNIDIR	United Nations Institute for Disarmament Research
UNODA	United Nations Office for Disarmament Affairs
VERTIC	Verification Research, Training and Information Centre
VPN	Virtual Private Network

IMPRESSO

ABACC

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