

**PRACTICAL AND THEORETICAL TRAINING AT THE ABACC – A
COMMITMENT WITH THE QUALITY OF ITS PERFORMANCE AND WITH
THE COMPETENCE OF ITS PERSONNEL**

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One of the greatest challenges faced by the ABACC in its performance of almost 15 years has been maintaining the quality of its work and the technical competence of its personnel, including officials and inspectors. Therefore, since its creation, the Agency has developed an intensive training program based on the constant evolution of technology and of the concepts applicable to nuclear safeguards. Additionally, the fact that the ABACC's team of inspectors is composed by technicians from Argentine and Brazilian institutions has made it necessary to homogenize their knowledge and a full understanding of the work to be performed within the framework of the Common System for Accounting and Control (SCCC) applied in both countries. In many cases, these training programs were extended to the technicians of the International Atomic Energy Agency (IAEA), as a way to facilitate the use of common procedures in the auditing of records, the operation of equipment and the performance of inspections. It is worth recalling that, in several occasions, the governments of Argentina and Brazil have made emphasis on the importance of continuous improvement towards efficiency and effectiveness in the work performed by the ABACC and the IAEA, while avoiding the duplication of inspection efforts.

For this purpose, the ABACC's Secretariat developed a training program including seminars, workshops, courses and technical visits, making use of lecturers and instructors from the national nuclear authorities in Argentina and Brazil [the Nuclear Regulatory Authority (ARN) and the National Nuclear Energy Commission (CNEN), respectively] and from other entities, such as the United States Department of Energy (DOE), the European Atomic Energy Community (EURATOM) and the IAEA, among other.

During these events, relevant subjects concerning the ABACC have been approached, such as international agreements, safeguards procedures and approaches, methods and techniques for destructive and non-destructive analyses, environmental sampling and the use of softwares that were especially developed for the ABACC in areas such as the auditing of records and the feeding of its database.

Most of these courses are held every year in Argentina and Brazil, at the ABACC's premises and include visits to nuclear facilities in both countries.

The first training provided by the ABACC was the "Technical Course on Safeguards", by which the Agency attempted to train its inspectors so that they could have, approximately, the same level of knowledge on the matter. This training evolved to become the "Basic Course on Safeguards" and, nowadays, it is oriented to the training of new inspectors. Its syllabus includes studying the most important documents used in the institution's work, such as the Bilateral Agreement, the General Procedures of the SCCC and its appendixes, the Technical Questionnaire (DIQ), the Manuals for the Application of Safeguards (facility attachments), the Quadripartite Agreement (INFCIRCI/435) and the Subsidiary Arrangements. Additionally, an approach is made to the strengthening of the IAEA's international safeguards and of the guidelines for the coordination of activities by both agencies.

Besides, activities performed during inspections in the facilities under the SCCC are introduced and examples are provided of the various procedures applied depending on the type of facility, as well as the techniques and equipment used in the non-destructive analyses (NDA) of nuclear materials, the measurements performed for containment and surveillance (C&S), the remote monitoring systems and the environmental sampling techniques, plus the provision of a detailed description of Appendix I / Code 10 of the General Part of the Subsidiary Agreements of INFCIRC/435, where the format of the accounting records and reports and their utilization are established.

On the other hand, back to the inspectors with a greater experience, the "Training on Inspection Procedures" offers a review of the basic safeguards documents and concepts, analyzing the relationship between the ABACC and the IAEA, and introducing the

latest update of the IAEA's operations data, as well as the structure of the inspection report.

In order to enhance the knowledge of these professionals, the ABACC created a series of activities for specific training, which varies depending on the needs of the Agency, the types of nuclear facilities and the equipment used.

For example, the workshop on "Containment and Surveillance Systems and Verification of Nuclear Materials" deals with the planning of activities and promotes practical applications of the procedures used during the inspections, such as the collection of nuclear material samples for destructive analyses (DA), the auditing of accounting records, the application of NDA techniques using radiation monitors and portable multichannel analyzers with different types of seals used by the ABACC and the IAEA, the methodology applied in the evaluation of the physical inventory of nuclear materials (PIV) and the preparation of inspection reports. At the end of the event, each one of the groups presents its results and conclusions. In Brazil, the practical part is performed at the Factory of Nuclear Fuel (FCN) of Indústrias Nucleares do Brasil (INB) and, in Argentina, at the premises of Combustibles Nucleares Argentinos (CONUAR). The ABACC promotes diverse courses on containment and surveillance. In all of them, the inspectors are trained in the application of these seals and in the use of the surveillance and review systems for the images stored therein.

There are some rather specific training activities, as it is the case of the preparation for the use of the Minimultichannel Analyser (MMCA) system for U-235 enrichment measurements during the activities for verification of the physical inventory of nuclear materials, by which individual inspectors are trained in the use of the equipment. Another one is the practical training on the neutron collar used in the measurement of non-irradiated fuel elements, which is performed under real conditions, both in Brazil and in Argentina, although carried out for groups.

Furthermore, the ABACC promotes courses on the auditing of records in which the procedures for the use of the audit worksheets are studied and practical exercises are carried out with the Software for Joint Auditing of Records (SJAR) developed by the ABACC for the performance of joint audits with the IAEA.

Taking into consideration the joint activities performed with the IAEA during the safeguards inspections to enrichment plants, workshops for the “Training of ABACC and IAEA inspectors in unannounced inspections” and the “Training in inspection procedures at the INB’s commercial uranium enrichment

plant”. The most relevant items in this training are the presentation of the principles of environmental sampling, their application in safeguards and the performance of sampling exercises in laboratories.

In addition to all the above, the ABACC has also been organizing seminars on the development of new technologies, the most outstanding of them on remote monitoring, security in electronic data transmission (cryptography, direct connection via Internet, authentication methods, etc.), equipment for containment and surveillance and for non-destructive tests, environmental sampling and the usage of measuring techniques.

As of 2007, another scheduled activity is a “Course on Design Information Verification (DIV)”, aimed at a further improvement of the inspectors’ capacity to observe and appraise any relevant alteration, either declared or not, that could have eventually occurred in a facility.

With this intense effort in practical and theoretical training, the ABACC expects to maintain the technical quality of its work and the competence of its personnel, thus complying effectively with the tasks established in the Agreement between the Federative Republic of Brazil and the Argentine Republic for the Exclusively Peaceful Use of Nuclear Energy.