

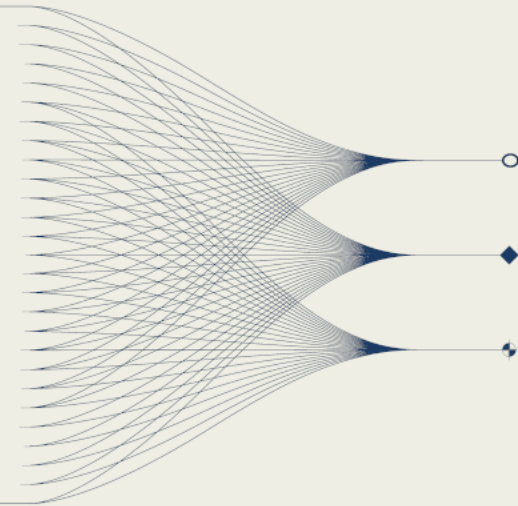
Arrangements and improvements of the Brazilian Gamma-Ray Spectrometry Laboratory (BRL04) for compliance with CTBTO certification requirements

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Summary

- Introduction
- The IRD and the BRL04
 - Radionuclide station
 - Environmental Radiometry Lab + BRL04
 - BRL04 equipment
- Pre-certification visits of Provisional Technical Secretariat
- Training in the PTS and ATL03 – Seibersdorf Labs
- Conclusion

Objective:

- To show the progress made towards certification

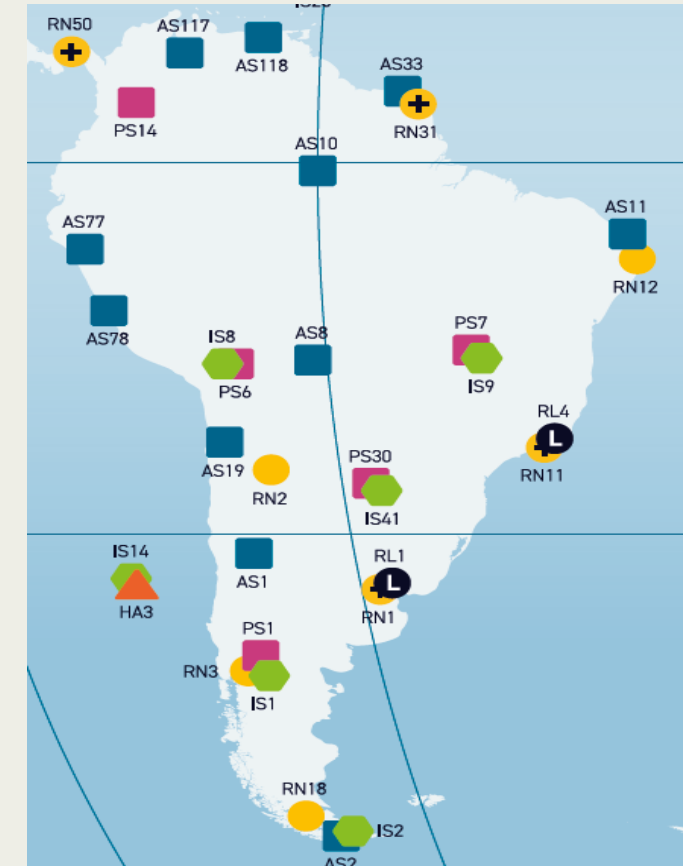
Introduction

- Radionuclide laboratory of CTBTO
- Participation of the BRL04 in Proficiency Tests

Table 1. Grade in the last four PTEs

Year	Grade
2024	A-
2023	A-
2022	A-
2021	A

- Presence in CTBTO Laboratory Workshops



The IRD and the BRL04

Division of Radiation Protection
Institute of Radiation Protection and Dosimetry (IRD)
Brazilian National Nuclear Safety Authority - ANSN
Rio de Janeiro, Brazil

Since 1972: research, analysis, surveillance

- Radiation Protection and Dosimetry
 - Workers, environment, patients
- Radiation Metrology – Brazilian National Laboratory of Ionizing Radiation Metrology
- Emergency Response
- Nuclear Security for Major Public Events (i.e. Olympic Games, FIFA World Cup, etc)
- Education and Training: short courses, specialization (with IAEA), Master of Science



Radionuclide station BRX11



RASA



SAUNA





Environmental Radiometry Lab

- Analysis of environmental samples
(461 samples analysed in 2025 until now)
- 3 HPGe detectors and associated electronics,
- Software Genie2K
- QMS implemented
- Temperature and air moisture control
- 2 technicians, 1 researcher (technical manager)



BRL04

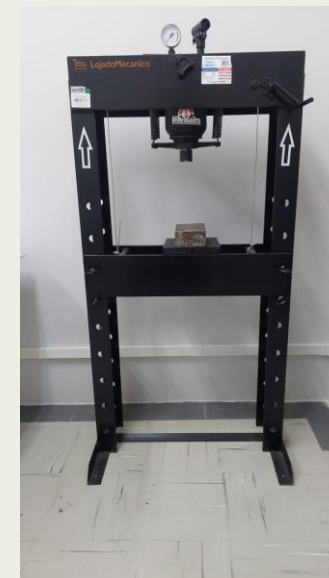
- Analysis of IMS samples (11 till 06Sept 2025)
- BEGE 5030 and associated electronics
- Genie2K and Spectrum interactive analysis software developed by BRL04
- Documents (QMS and technical)
- Manual press and cutting tools
- 1 researcher, + 1 senior consultant (gamma-ray spectrometry specialist)

BRL04 equipment

BRL04 detector



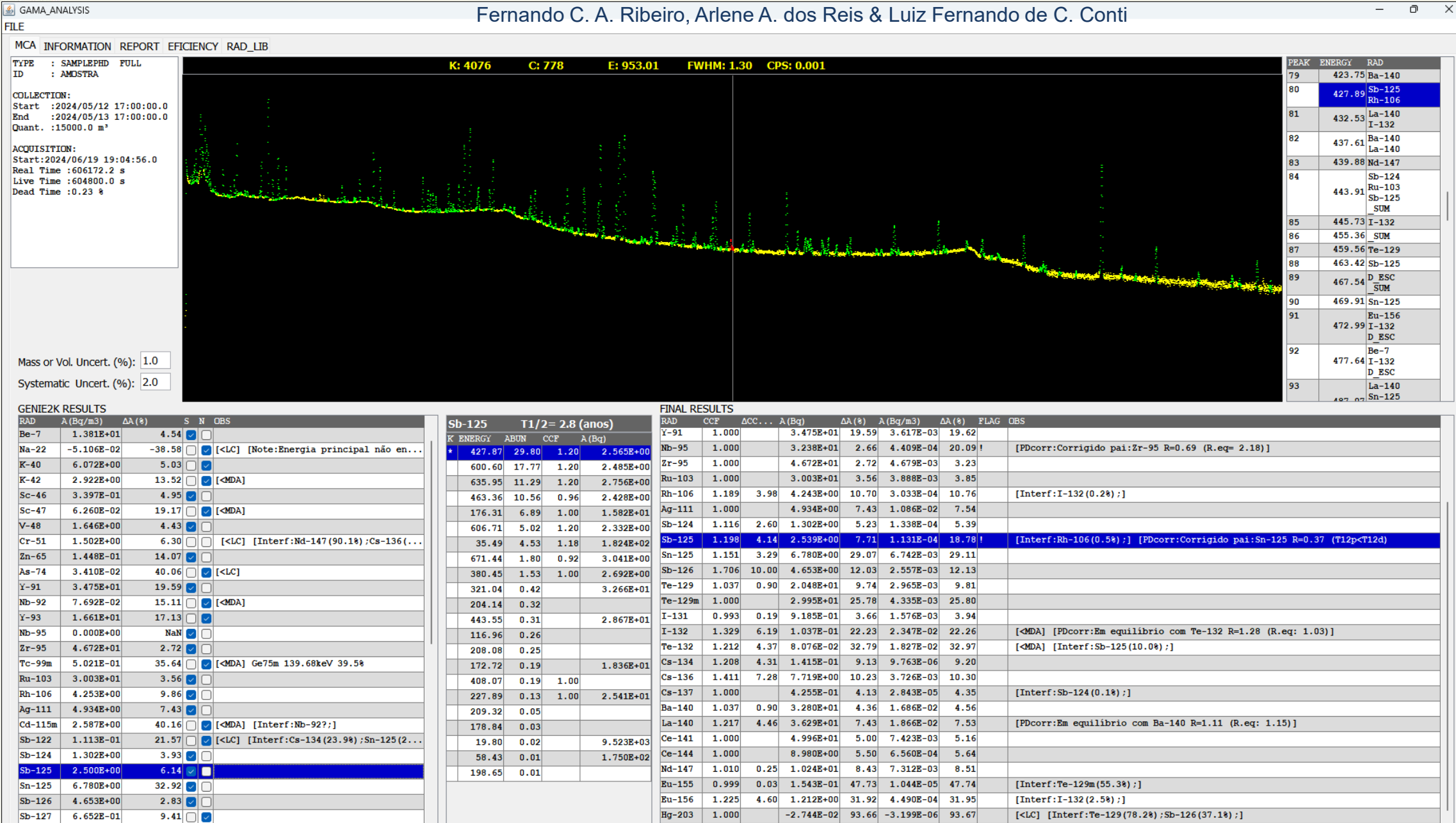
Sample preparation room





Dr. Robert Floyd visited the laboratory on 02 September 2022.

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Pre-certification visits of Provisional Technical Secretariat

March 2024



October 2024



Training in the PTS and ATL03 – Seibersdorf Labs

March 2025



- **Public Key Infrastructure:** Certificate request and generation
- **Sample:** from receiving, preparation, and analysis, till sending back to PTS
- **Documents:** related to the IMS sample analysis and custody, QMS, and results report.
- **Meeting:** IRD/CNEN, PTS/CTBTO, and Brazilian Permanent Mission in Vienna

Test of sample analysis (5 RASA, 5 Manual and 1 Cinderella)

QMS and Technical Documents

Next pre-certification visit : October 2025



Conclusion

- BRL04 has received full support for the pre-certification phase from both IRD and PTS/CTBTO;
- Submit for certification by early 2026;
- Staff commitment to attend the requirements and participate in the CTBTO radionuclide laboratory network as a certified laboratory.



Thank you!

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