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Naval nuclear propulsion: Brazil

Report by the Director General

A. Introduction

1. This report of the Director General is on Agency safeguards in relation to Brazil's naval nuclear propulsion programme. It provides an update since the Director General's previous report of May 2023.¹

B. Background

2. In December 2021, Brazil informed the Agency of its decision to initiate discussions with the Agency on an arrangement for Special Procedures for the use of nuclear material under safeguards in nuclear propulsion and in the operation of submarines and prototypes, in accordance with Article 13 of the Agreement between the Republic of Argentina, the Federative Republic of Brazil, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) and the Agency (the Quadripartite Safeguards Agreement).²

3. Article 13 of the Quadripartite Safeguards Agreement (QSA) provides that if a State Party intends to exercise its discretion to use nuclear material³ which is required to be safeguarded under the QSA for nuclear propulsion or operation of any vehicle, including submarines and prototypes, or in such other

¹ GOV/INF/2023/11, 31 May 2023.

² Reproduced in document INFCIRC/435.

³ "Nuclear material" means any source or any special fissionable material as defined in Article XX of the Statute (...). See Article 98.2.O. of INFCIRC/435.

non-proscribed nuclear activity as agreed between the State Party and the Agency, the procedures provided in paras (a) – (c) of Article 13 shall apply.

4. Brazil stated that, in compliance with the requirements set out in Article 13 of the QSA, “the use of the nuclear material for nuclear propulsion of submarines and prototypes will not be in conflict with any undertaking of Brazil under agreements concluded previously with the Agency referring to safeguards” and “during the period of application of the special procedures the nuclear material will not be used for the production of nuclear weapons or other nuclear explosive devices”. It also stated that the Brazilian Navy had developed indigenous technologies for the nuclear fuel cycle and was designing a nuclear-powered conventionally-armed submarine; its nuclear propulsion plant was also being developed indigenously, and the nuclear fuel for the reactor will be produced in Brazilian nuclear facilities, all of which are under Agency and ABACC safeguards.

5. Pursuant to Article 40 of the QSA and Code 3.1.2 of the Subsidiary Arrangements (General Part) to the QSA, Brazil notified the Agency that, in line with the schedule of the nuclear-powered submarine programme, a partial license for its construction had been issued by the Naval Authority for Nuclear Safety and Quality.

6. The Agency aims to ensure that it will be able to continue to fulfil its obligations under the QSA and provide a credible and soundly-based conclusion that the nuclear material that will be subject to the arrangement under Special Procedures pursuant to Article 13 of the QSA will not be diverted to nuclear weapons or other nuclear explosive devices.^{4,5}

7. On 25 May 2022, Brazil provided the Agency with a “proposal of safeguards special procedures for the nuclear material for use in naval propulsion prototypes and in the conventionally armed, nuclear-powered submarine” in relation to the provisions of Article 13 of the QSA. On 26 May 2022, preliminary discussions between Brazil, ABACC and the Agency were initiated. During these discussions, Brazil provided the Agency and ABACC with general information on the nuclear submarine operation, facilities that would be involved in the programme, and what Brazil considered “classified and sensitive technology and information”. In light of these considerations, Brazil indicated the facilities that would be involved in the development of naval nuclear propulsion including a land-based prototype reactor and submarine, and provided its understanding of how safeguards under the QSA could be applied under the arrangement for Special Procedures. The Agency, inter alia, reiterated its commitment to protect related classified knowledge, as required by the QSA and the Agency’s regime for the protection of classified safeguards information.

8. In October and November 2022, the Agency held two meetings with Brazil and ABACC. During the first meeting, upon Brazil’s invitation, the Agency visited relevant facilities. During the second meeting, the Agency presented a conceptual proposal of safeguards measures to be considered as part of the discussions on the arrangement under Special Procedures in relation to Article 13 of the QSA. The Agency’s proposal was customized to protect sensitive information while providing assurance that the nuclear material being used for nuclear propulsion or in the operation of the prototype reactor would not be diverted.

9. In May 2023, the Agency received from Brazil through ABACC preliminary information related to the planned facilities of the naval nuclear propulsion programme, as required under Article 40 of the QSA and the Subsidiary Arrangements (General Part) to the QSA.

⁴ INFCIRC/435 (QSA) Article 2(a).

⁵ INFCIRC/435 (QSA) Article 13(a)(ii).

C. Developments since previous report

C.1. Interactions between the Agency, Brazil and ABACC

10. Since the Director General's previous report in May 2023, the Agency, ABACC and Brazil have held four meetings in Brazil and Vienna to continue technical discussions on possible safeguards measures for the land-based prototype reactor and on how classified and sensitive technology and information can be protected while applying such measures. The Agency also proposed possible technical measures to protect classified information related to the fuel to be used in the land-based prototype reactor and submarines.

11. In February 2024, the Agency organized a workshop on 'safeguards-by-design' in Brazil for Brazilian regulators, facility designers and operators. The Agency highlighted the importance of taking safeguards into account when designing the facilities that would be involved in Brazil's naval nuclear propulsion programme.

12. In September 2024, Brazil, in response to requests by the Agency and ABACC, provided updated design information for the land-based prototype reactor. This information is essential for the Agency and ABACC to develop the safeguards approach for the facility.

13. The Agency and ABACC have continued to conduct design information verification (DIV) at the land-based prototype reactor. As construction progresses and in order to protect sensitive information, the Agency, ABACC and Brazil developed a DIV procedure which was tested during the DIV conducted at the facility in September 2024.

C.2. Other relevant information

14. On 27 March 2024, open sources, released in the context of the French President's visit to Brazil, reported that France would continue to assist Brazil in the development of its nuclear-powered submarines, without announcing any specific assistance to Brazil. The Agency, in a letter dated 2 May 2024, requested France to provide to the Agency any relevant information, as necessary, in the context of France's reporting obligations under its Additional Protocol (AP).

15. In its reply, dated 15 October 2024, France clarified that its cooperation with Brazil on the conventional components of Brazil's nuclear-powered submarines began in 2008. France also indicated that any aspects of this cooperation relevant to France's legal obligations would continue to be reported to the Agency under France's AP declarations.

D. Summary

16. Since May 2022, the Agency has engaged Brazil and ABACC on technical discussions in relation to an arrangement under Special Procedures pursuant to Article 13 of the QSA. Technical consultations will continue for the foreseeable future.

17. Brazil has provided to the Agency updated design information for the land-based prototype reactor and the Agency has been able to conduct DIVs at this facility. The Agency will conduct further verification activities at this facility as and when necessary.

18. The Agency, ABACC and Brazil have continued the discussions on technical aspects of the arrangement under Special Procedures pursuant to Article 13 of the QSA, and on ways to facilitate

possible verification activities in relation to Brazil's naval nuclear propulsion programme. Detailed technical discussions will continue in order to develop the required arrangement. Once the arrangement is finalized, the Director General will transmit it to the Board of Governors for appropriate action.

19. The Director General will continue to report as appropriate.