

BRAZIL

1. LOCATION AND CAPABILITY OF NUCLEAR FACILITIES

Brazil's research in the nuclear field began as early as the 1930s with nuclear fission research followed by the discovery of uranium deposits by mid-decade. Throughout the 1940s, Brazil's nuclear program grew, mostly through technology transfers from the United States. By 1956, Brazil decided to pursue an independent, indigenous program without control and oversight by the US. In 1965, Brazil built its first indigenous research reactor in Rio de Janeiro, though the US supplied the medium-grade enriched uranium and maintained strict control over their construction, in exchange for continued supplies of natural uranium to the US.

Brazil and Argentina embarked on a bilateral nuclear arms race in the 1970s and 80s. Through technology transfers from West Germany, which did not require IAEA safeguards, Brazil pursued a covert nuclear weapons program, replete with enrichment facilities (including a large ultracentrifuge enrichment plant and several laboratory-scale facilities), a limited reprocessing capability, a missile program, a uranium mining and processing industry, and fuel fabrication facilities.

By 1987, with Brazil able to enrich uranium to 20%, many predicted a Brazilian nuclear weapon by the end of the century. In 1990, President Fernando Collor de Mello symbolically closed a test site at Cachimbo, in Pará and exposed the military's secret plan to develop an atom bomb.

Through a series of agreements, Brazil and Argentina renounced their nuclear rivalry. On 13 December, 1991, they signed the Quadripartite agreement, at the IAEA headquarters, allowing for full-scope IAEA safeguards of Argentine and Brazilian nuclear installations.

Today, Brazil has the most advanced nuclear capabilities in Latin America, with a multi-faceted fissile material production program and the navy, air force and army involved in various sectors of its nuclear research and development program. Until 2009, Brazil plans to invest US\$8.2 billion annually to increase the capacity of generation of electric energy in the country.

<http://www.globalsecurity.org/wmd/world/brazil/nuke.htm>

Power Reactors

Operational: 2

Planned: 0

<http://www.iaea.or.at/programmes/a2/>

Research Reactors

Operational: 4

Planned: 0

<http://www.iaea.or.at/worldatom/trddb/>

Uranium Mines

Brazil embarked on systematic prospecting and exploration of radioactive minerals in 1952. From 1974 to 1991, the total amount spent in uranium exploration was equivalent to US\$150 million. Brazil has been producing uranium since 1982, with untapped uranium deposits believed to cover 50% of the Brazilian territory, which is home to the fifth-largest known natural reserves of uranium.

<http://www.globalsecurity.org/wmd/world/brazil/nuke.htm>

<http://www.antenna.nl/wise/uranium/uosam.html>

Rohter, Larry, "Brazil Pressing for Favorable Treatment on Nuclear Fuel," *New York Times*, 25 September 2004
<http://www.nytimes.com/2004/09/25/international/americas/25brazil.html>

Uranium Enrichment

In 2003, a new enrichment plant for uranium opened at Resende; production began in early 2004, though agreement on verification with the IAEA was not reached until November.

<http://www.antenna.nl/wise/uranium/eproj.html#BR>

The uranium enrichment program is partly operated and controlled by the Brazilian Navy, indicating possible military, as well as civilian applications. In their public statements, navy and civilian officials

have suggested that Brazil sees uranium enrichment as a promising source of income that could ease those problems.

Rohter, Larry, "Brazil Pressing for Favorable Treatment on Nuclear Fuel," *New York Times*, 25 September 2004
<http://www.nytimes.com/2004/09/25/international/americas/25brazil.html>

2. FISSILE MATERIAL HOLDINGS

Cumulative plutonium discharges from civilian power reactors- 1.9 tons

http://www.isis-online.org/global_stocks/civil_pu.html#table7

Radioactive waste disposal

Over the past 40 years, Brazil has generated about 14,000 cubic meters of nuclear waste, including material from nuclear power plants and medical use. A radioactive waste accident in 1987 in Goiânia, wherein 4 people died and at least 200 were contaminated, spurred greater care of radioactive wastes in Brazil.

Nuclear waste is now disposed of in four temporary depositories owned by the National Commission of Nuclear Energy (CNEN). The government continues to explore options for the construction of permanent deposit sites for radioactive waste. <http://ehp.niehs.nih.gov/docs/2000/108-11/focus.html>

3. NUCLEAR ACTIVITIES

Research Centers

CDTN: Centre for Nuclear Technology Development

CNEN: National Nuclear Energy Commission

CBPF: Centro Brasileiro de Pesquisas Físicas

CENA: Centro de Energia Nuclear na Agricultura

IPEN: Institute for Energy and Nuclear Research

IEN: Institute for Nuclear Engineering

IRD: Institute for Radiation Protection and Dosimetry

LNLS: Laboratório Nacional de Luz Síncrotron

<http://www.radwaste.org/research.htm>; <http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2002/index.htm>

Nuclear Cooperation

US: In 1940, President Getúlio Vargas signed an agreement with the United States for cooperative mining, including mining for uranium and monazite. During the 1940s, Brazil signed four agreements with the United States relating to mining and technology transfers.

In June 2003, the United States Department of Energy and the Brazilian Ministry of Science and Technology signed a bilateral agreement jointly conduct research and development in the field of advanced reactor developments for future-generation nuclear energy systems; advanced reactor fuel and reactor fuel cycle integration; life management and upgrading of current operating reactors; advanced fuel and material irradiation and use of experimental facilities; environmental and safety issues related to new reactor and fuel cycle technologies; and fundamental areas of nuclear engineering and science.

West Germany: 27 June 1975 agreement transferred eight nuclear reactors from West Germany, as well as a commercial-scale uranium enrichment facility, a pilot-scale plutonium reprocessing plant, and Becker "jet nozzle" enrichment technology. This agreement was the first to ensure the transfer of technology for a complete nuclear fuel cycle, including enrichment and reprocessing. It formed the basis for Brazil's covert nuclear weapons program.

Russia: In September 1994, Russia and Brazil agreed to cooperate in the development of nuclear ener-

gy, including nuclear safety. During talks in April 1995, the two sides considered the construction of small nuclear power plants in Brazil using low-capacity Russian reactors like those used on icebreakers. <http://www.globalsecurity.org/wmd/world/brazil/nuke.htm>
<http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2002/index.htm>

4. INTERNATIONAL NON-PROLIFERATION EFFORTS

Treaties Signed and Ratified, date of deposit

Comprehensive Nuclear Test-Ban Treaty, 24 July 1998

Convention on Nuclear Safety, 2 June 1997

Convention on the Physical Protection of Nuclear Material, 8 February 1987

Nuclear Non-Proliferation Treaty, 18 September 1998

Outer Space Treaty, 5 August 1963

Sea Bed Arms Control Treaty, 4 April 1988

Treaty of Tlatelolco, 29 January 1968, Amended 30 May 1994

Brazil has not yet signed the IAEA Additional Protocol.

Multilateral Groups

Nuclear Suppliers Group

Missile Technology Control Regime

5. POSITIONS TAKEN IN INTERNATIONAL FORA ON VARIOUS ISSUES OF NUCLEAR DISARMAMENT

Non-proliferation: "The growing emphasis on strengthening non-proliferation mechanisms in the current international scene must be accompanied by similar efforts in terms of disarmament and enhancement of international cooperation for the development of nuclear technology for peaceful purposes. Instead, regretfully, we see that new rationales are sought for the maintenance or development of new and more sophisticated nuclear weapons. The unfortunate consequence of such development is that countries may be led to see nuclear weapons as security enhancers.

"In order to curb proliferation, a number of countries believe that by avoiding time-consuming diplomatic negotiations and resorting to arrangements of limited participation and more flexible implementation they will address sensitive questions in a more efficient manner. In Brazil's view, ad hoc mechanisms cannot replace the efficiency and legitimacy of multilaterally negotiated instruments. Mechanisms negotiated among a relatively reduced number of countries tend to hamper even further credibility of the existing instruments we should strive to preserve." - **Statement at the 59th session of the General Assembly First Committee on Disarmament and International Security, 7 October 2004.** <http://www.reachingcriticalwill.org/political/1com/1com04/statements/Brazil.PDF>

Nuclear technology: "...the exercise of the right of all NPT parties to develop research, production and use of nuclear energy for peaceful purposes without discrimination cannot be in any way jeopardized by attempts to rewrite or reinterpret Article IV. In the same vein, no new obligations under Article III can come to existence without proper and explicit decision by the membership of the Treaty."

- **Statement at the 59th session of the General Assembly First Committee on Disarmament and International Security, 7 October 2004.**

<http://www.reachingcriticalwill.org/political/1com/1com04/statements/Brazil.PDF>

Practical Steps: "...the 'unequivocal undertaking' made by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals and implement 13 agreed steps toward this end was hailed as a major outcome. The international community should resist attempts to downgrade the degree of commitment to these measures... The fulfillment of the 13 steps on nuclear disarmament agreed dur-

ing the 2000 Review Conference have been significantly- one could even say systematically- challenged by action and omission, and various reservations and selective interpretation by nuclear weapon States. Disregard for the provisions of Article VI may ultimately affect the nature of the fundamental bargain on which the Treaty's legitimacy rests.” **Statement by H.E. Mr Sérgio de Queiroz Duarte during the Cluster I debate of the Third Preparatory Committee of the 2005 NPT Review Conference, 3 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/prepcom04/BrazilCLI.pdf>

Negative Security Assurances: “International peace and security can only benefit from the total elimination of nuclear weapons. But while those weapons exist, it is necessary that unconditional negative security assurances be granted to non-nuclear-weapon States. In this regard, reservations and interpretations by nuclear weapon countries of their obligations contained in the Protocol II of the Tlatelolco Treaty should be revised or withdrawn...” **Statement by H.E. Mr Sérgio de Queiroz Duarte during the Cluster I debate of the Third Preparatory Committee of the 2005 NPT Review Conference, 3 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/prepcom04/BrazilCLI.pdf>