ABACC System can originate a Weapons-Useable Nuclear Material Free Zones?

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20 years of the ABACC System

• In 1991 Bilateral Agreement (or ABACC Agreement) for only peaceful uses of nuclear energy was signed and put in force by Brazil and Argentina

• December 1991 ABACC was officially installed and the Quadripartite Agreement Brazil, Argentina, AIEA and ABACC signed

• In 1991 the Mercosul Agreement started the economic integration of South America

• The year of 1991 was also the year of the dissolution of the Soviet Union and there was fear for what would happen with the new resulting countries that came into possession of nuclear weapons in their territories.
Regional Motivation for Nuclear Proliferation

- When ABACC was created (1991) there were a number of regions in the world where we could find regional motivations for nuclear proliferation.
- Where the motivations were deactivated, South America and South Africa, the nuclear proliferation is no more an issue.
- In the other regions, Korea Peninsula, India – Pakistan and Middle East the present situation is worse than it was in the early nineties.
- The question of proliferation or non-proliferation of nuclear weapons is determined by a balance between barriers (including technological, economic and political) and motivation that a country will have to possess or not this type of weapon.
- The ABACC Agreement is an example of how a simultaneous action regarding motivations and barriers can be effective.
Global Motivation: Case of Brazil

- A country can have global motivations or regional ones to proliferate.
- The global motivations presuppose an economic and territorial capacity that is compatible with the capacity of projecting power on a global scale.
- Among the ten largest world economies only Brazil does not possess, store or is, in some way, protected by nuclear weapons.
- Brazil is also the only country that has no special “weapons-useable nuclear materials”, defined as one kilogram or more of HEU, separated Pu, and Pu content in non irradiated MOX (mixed oxide fuel). (IPFM, 2010)
Nuclear weapons and fuel cycle mastering in the ten largest economies in the world

<table>
<thead>
<tr>
<th>Rank GDP PPP</th>
<th>Country</th>
<th>Nuclear Weapons</th>
<th>Fuel Cycle Mastering</th>
<th>Weapons-Useable Nuclear Material*</th>
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</thead>
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<tr>
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<td>USA</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Japan</td>
<td>Umbrella</td>
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<td>Yes</td>
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<tr>
<td>4</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>5</td>
<td>Germany</td>
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<td>6</td>
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<td>7</td>
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<td>No</td>
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</table>
Regional Motivation

- Together with New Zealand, Brazil is the only country in the world that has banned the non-peaceful use of nuclear energy in its own National Constitution.
- Therefore, Brazil is signatory of both the Nuclear Non Proliferation Treaty and of the Tlatelolco Treaty. This latter establishes Latin America and Caribbean as a nuclear weapon free zone.
- The ABACC Agreement in (1991) has helped to eliminate a potential nuclear arms race in the region and has provided the favorable political climate for the installation of Mercosul, in an interesting parallel with Eastern Europe, where the Euratom Treaty contributed to laid the foundations for the European Community.
- This economic bloc was the basis for the economic integration of the South American continent.
- Trade with Argentina, that was almost negligible, has transformed our neighbor country into the second commercial partner of Brazil.
Commercial trade Brazil x Argentina: solving nuclear issues was important
Social motivations

• In the South American political scene there were non-democratic regimes, most of them of military nature, which could favor proliferation initiatives.
• The military regime in Brazil lasted from 1964 (when President João Goulart was overthrown) until 1985 when power was handed over to civilians.
• At the end of the 1980s, all countries in South America below the equator line were under military regimes, as shown in next slide
No real race on nuclear weapons between Brazil and Argentina

- There are no historical evidences, even after two decades of official and unofficial access to confidential documents, that Brazil or Argentina were effectively engaged in a program for production of nuclear weapons.

- Apparently what has existed was a secret activity in order to dominate dual use technologies which could prepare the countries for the production of a nuclear device.

- This activity, although secret, was not illegal or opposed to the international agreements in force for both countries.

- But democratic regimes are important for transparency and to assure the constitutional and international commitments of only peaceful uses.
Strengthening ABACC Regime as an alternative for Additional Protocol

- The Additional Protocol in its present configuration is, from our viewpoint, not fully compatible with ABACC’s system.
- Its application would practically result in abandoning the bilateral system and this might mean a net loss in the security of the system, instead of improving it.
- The solution should be capable of combining the bilateral system and the IAEA inspections with some additional measures that might offer safety in detecting non declared activities.
- This solution is being analyzed and it could contemplate the unparalleled circumstance of creating a safeguards system for a country that would utilize nuclear submarines.
An alternative for Additional Protocol

- One of the ideas is a voluntary commitment to not having any amount of HEU or separated plutonium 239 in the country. A minimum Pu240/Pu239 ratio would be established.
- A first proposal for an alternative to the Additional Protocol system can be seen in Feu Alvim, C. (2205) ecen.com/eee52/eee52e/ecen_52e.htm
- The idea is to use environmental sampling to detect undeclared manipulation of this type of material.
- The detection of any quantity of this type of material will trigger an investigation aiming at clarifying the issue.
Some of the barriers

- Renouncing the possession of this type of material implies giving up or postpone some possible nuclear applications.
- Reactors for satellites;
- Make unviable some special research reactor such as those of high flux.
- Limitation of power or autonomy of nuclear submarines.
- Limits to use plutonium in power reactors
- However, based on peaceful applications normally considered for the medium term in the countries, probably there would not be considerable harm for planned activities
- Technological solutions for some of those issues can probably be found for the future or they even already
A weapons-useable nuclear material free zone in South America?