Impact of Indo-US Agreement on Indian Strategic Weapon program: 
Will it make available more indigenous Uranium reserve for Indian Weapons Program?

Introduction

On July-18,2005 President Bush and Prime Minister Singh in a major breakthrough announced an agreement on ‘Global Strategic Partnership’ involving many sub-agreements, including civil nuclear energy cooperation, whose details were further agreed on March 2, 2006. The civil nuclear power cooperation envisages United States to remove sanctions legislated by US Congress in 1978 on nuclear fuel and power-plant technology, and work with US lead NSG to accommodate nuclear fuel supply for Indian civilian nuclear plants. India in turn will separate its strategic facilities from civilian facilities and put all current & future civilian nuclear power plants and facilities under site specific IAEA safeguards.

Some opponents of this agreement have argued that India has small Uranium reserve thus letting India purchase nuclear fuel supply for civilian power plants from NSG will somehow help Indian nuclear weapons program by making available greater fraction of indigenous Uranium reserve for military nuclear weapons program.

Assessment

Let us look at facts to understand merit of this argument.

1. Indian strategic nuclear weapons use approximately 3 Kg Plutonium.

2. India has large un-safeguarded Plutonium stockpile (conservatively estimated to between 3,000 K and 6,000Kg), a fraction of that will suffice to make hundreds of nuclear weapons if India choose to exercise the option.

3. Indian PHWR reactors that are outside IAEA safeguard when operated for efficient power generation would have cumulatively required just 5,842 tonnes. India is estimated to have mined about 9,200 tonnes of natural-uranium, indicating that about 55% of the fuel and 8% of its reactor capacity was used in low fuel burn mode, generally associated with operating the reactors in mode optimized to generate weapon grade Plutonium. This corresponds to about 2,400Kg weapon grade Plutonium enough for 800 strategic nuclear weapon.

4. Current Indian reserves of uranium estimated between 77,500 – 94,000 metric tonnes, enough to support 12,000 MWe power generation for 50 years.

5. Current Indian PHWR reactors that are outside IAEA safeguard annually require 116 tonnes of natural-uranium when operated in a mode optimized for power generation. When operated in a mode optimized to generate weapon-grade Plutonium they require just 747 tonnes of natural-uranium annually, in the process they generate 745 Kg weapon grade Plutonium, which is enough for 248 nuclear weapons per year.

From above one can clearly see that there is no merit in the argument that US-India civilian nuclear agreement will be of any consequence to Indian nuclear weapons programs.

Conclusion

In conclusion the Indo-US agreement on civil nuclear reactors does not help Indian military program:

1. India already has fissile material enough to make more than 800 warheads.

2. Its Fast Breeder Reactors can generate limitless fissile material for weapons or civilian applications.

Date: 02-May-2006
Author: Arun Sharma
### Appendix: Analysis details

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<th>Reactor Type</th>
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<th>Plant Capacity</th>
<th>Uranium Burn</th>
<th>Fissile Plutonium</th>
<th>Accumulated Pu</th>
<th>Cumulative Spent Fuel</th>
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#### Power from all 15 operational power reactors (MW)

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<th>Reactor</th>
<th>Type</th>
<th>Power Multiplier</th>
<th>In-Service Date</th>
<th>Status</th>
<th>U235 required / MWe-Year</th>
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#### Power from reactors under construction (MW)

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#### Total Power in 2010 (MW)

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2. Assuming 650 tonne fuel is set aside for inventory and fuel fabrication WIP. Also factors in reduced plant load factor and fuel for weapon grade Pu stays in reactor only 15% of the normal time.
3. Nuclear negotiations -India has the upper hand - Feb 02, 2006: [http://www.thehindubusinessline.com/2006/02/02/stories/2006020201431000.htm](http://www.thehindubusinessline.com/2006/02/02/stories/2006020201431000.htm)
6. Minimum Indian Uranium reserve (Kg): 77,920,000
7. Number of weapons possible: 19,338

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