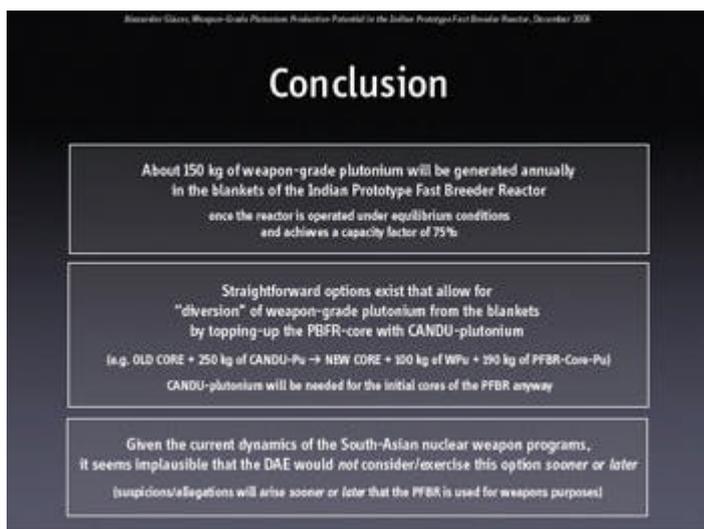




Is this India's newest nuke bomb factory?

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The final page of Dr Glaser and Dr Ramana's report.

It nestles in the relatively quiet Department of Atomic Energy (DAE) campus at Kalpakkam, less than 700 km from Kanyakumari, the southernmost tip of India. With two 220 Megawatt (MWe) Pressurised Heavy Water Reactors and a Fast Breeder Test Reactor to keep it company, it is not quite the big daddy of the family yet. But the 500 MWe Prototype Fast Breeder Reactor (PFBR) set to become functional in 2010 is drawing flak already.

The nub of the controversy surrounding the PFBR is highlighted in a research paper that the eminent nuclear experts Dr Alexander Glaser and Dr MV Ramana published in the journal *Science and Global Security*.

In [Weapon-Grade Plutonium Production Potential in the Indian Prototype Fast Breeder Reactor](#), Dr Glaser and Dr Ramana state why the reactor, designed to breed plutonium (that is produce more plutonium than is fed in), could become the breeding factory for India's future nuke bombs.

With the help of detailed calculations and explanations, the two scientists have gone on to prove that "the PFBR, once operational, will be in a position to produce about 150 kg of weapon-grade plutonium annually."

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Dr Glaser and Dr Ramana argue that "India's large stockpile of separated reactor-grade plutonium (derived) from its unsafeguarded spent heavy-water reactor fuel could serve as makeup fuel to allow such diversion of the weapon-grade plutonium" from the fast breeder reactor.

When contacted by **Sify.com** and asked why he believed the DAE will exercise this option and divert weapon-grade plutonium, Dr Ramana, Senior Fellow at the Bangalore based *Centre for Interdisciplinary Studies of Environment and Development*, explained, "The DAE has tried very hard to avoid safeguards at the PFBR. If it were to be a purely civilian facility, that would not be necessary."

He also went on to question the very grounds on which India has made the argument for building the PFBR: that "with the uranium available in our country, we can generate only 12,000 MWe from thermal reactors. But with Fast Breeders that use plutonium from thermal reactor, we can generate 350,000 MWe, which is a massive amount."

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Reminded of this, Dr Ramana replied, "The issue is not just producing electricity but doing so in an economic manner. Otherwise, in principle, one could derive all of India's electricity from solar photovoltaics. But this would be hugely expensive. Our research (by Dr Ramana and JY Suchitra, an economist) suggests that electricity from the PFBR will be significantly more expensive than electricity from the DAE's staple heavy water reactors, which are themselves more expensive than, say, coal. PFBR electricity will become even more expensive if it (the reactor) is used to produce weapons grade plutonium."

The prohibitive costs involved was, he confirmed, one of the important reasons why five out of the six other countries – US, France, Germany, Britain, Germany and Japan - who had invested in fast-breeder technology put their programmes on hold.

An even bigger headache is safety.

Dr Ramana again: "One particular concern with fast breeder reactors is that they are susceptible to large and explosive energy releases and dispersal of radioactivity following a core meltdown. Termed the Core Disruptive Accident (CDA), such accidents have been the distinguishing concern in safety studies of fast breeder reactors."

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The higher costs and graver safety concerns when it comes to operating fast breeders are both mainly triggered by one simple fact: Plutonium is 30,000 times more radioactive than U-235, the fuel used in heavy water reactors. This not only leads to more money being spent on safety precautions and reprocessing, but also brings alive the threat that when accidents occur, the radiation hazard is significantly higher.

India, though, seems to have little time for these concerns surrounding a technology that could kill and maim many thousands if it fails. Or even to address the vital question that the inference drawn by Dr Glaser and Dr Ramana raises, of whether the PFBR is primarily a nuke factory.

The nuclear establishment is instead busy planning work on four more new fast breeder reactors, including two more at Kalpakkam.

This unseemly haste to embrace technology that even developed countries have turned diffident about coupled with the lack of an informed debate involving at least Indian experts like Dr Ramana remains worrisome. It is high time either the Atomic Energy Commission chairman Anil Kakodkar or one of his top scientists answered these charges.

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