



CBRN South Asia

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CBRN South Asia is an online monthly bulletin of the Nuclear Security Programme of the Institute of Peace and Conflict Studies, providing a coverage of commentaries and news reports relating to chemical, biological, radiological and nuclear weapons material and substances in South Asia.

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EDITORS

Tara Sarin



NUCLEAR SECURITY PROGRAMME (NSP)

Institute of Peace and Conflict Studies (IPCS)

B-7/3, Safdarjung Enclave
New Delhi, INDIA
Tel: 91-11-41001900

Institute of Peace and Conflict Studies

June 2010, Vol. 3, No. 5

The eight Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons was held from 3-28 May, 2010 in New York. The treaty achieved its most basic purpose of adopting a Final Document. The US administration, in the last two years, has invested a lot of capital to ensure that the Review Conference does not fail in a manner similar to the 2005 conference. The conference was preceded by President Obama's speech in Prague in April 2009, the release of the US' Nuclear Posture Review which for the first time limits the role of US nuclear weapons in its national security strategy, the signing of the New START agreement between United States and Russia and finally the Nuclear Security Summit, all of which grabbed headlines in April 2010. With such an enormous calculated effort being put in to salvage the NPT Review Conference, the chances of a failure were far and between. Yet, the conference was unable to retain the initial enthusiasm and positive atmosphere with which it began.

The President of the Conference, Filipino Ambassador, Libran Cabactulan, released the document as "the best that can be offered" and admitted that the document "may not fully satisfy many." Cabactulan expressed appreciation however, that the state parties agreed on some of the key contentious issues for the successful outcome of the final agreement. He said "though the negotiations were complex, and some key issues could not be isolated from difficult political realities, I was pleasantly pleased to see a very potent spirit of cooperation and the clear message with the clear common desire of all participants to work towards success."

According to the Reaching Critical Will's *NPT News in Review, No.20*, the P4 (Russia, France, the United States and the United Kingdom) "watered down the disarmament aspects of the text, particularly the action plan." According to the same report, the P4 were of the opinion that they "have done disarmament and are not interested in doing any more at this time, not for at least the next five years." Another

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contention was regarding the issue of time bound disarmament. Paragraph 83 of the draft document reaffirmed that the final phase of the nuclear disarmament process and other related measures should be pursued within a legal framework, but with regards to timeline, it only says that "a majority of States parties believe [this process] should include specified timelines". The NWS watered down the final document by diluting the language on modernization or development of nuclear weapons. The clause which asked for committed action by them to cease modernization and development of nuclear weapons has been deleted. It has been replaced by some non-actionable language recognizing "the legitimate interests of non-nuclear weapon states in the constraining by the nuclear weapon states of the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of weapons."

Nuclear Dealing Wheeling

PR Chari, Research Professor, Institute of Peace and Conflict Studies

History, they say, has a way of repeating itself, first as a tragedy, and then as a farce. These dour thoughts have reared up after news leaked out in end-March that Pakistan and China had finalized a civilian nuclear deal. China was to provide loans and technical assistance to Pakistan for building two atomic power plants. It has now been revealed that China has signed a US\$2.375 billion agreement for supplying two 340MW power reactors to Pakistan. Beijing would also loan some 80 per cent of the project cost. These reactors, designated Chashma-3 and Chashma-4, will be erected alongside Chashma-1, attained criticality in 2000, and Chashma-2, that will become critical in 2011.

So, where does history enter this picture? Here it needs digressing to recall that India and the United States had reached an agreement in July 2005 envisaging civilian nuclear technology cooperation, which fructified into a '123 agreement' in 2008 to amend the US law and permit nuclear technology exports to India. The remarkable aspect of this '123 agreement' is that India had been sanctioned earlier and made ineligible to receive civilian nuclear technology, ever since its nuclear testing in 1974 and again in 1998. The Nuclear Non-Proliferation Treaty (NPT) stipulates that nuclear technology cooperation is only available to NPT signatories. India, along with Pakistan and Israel, are the three countries that are non-signatories to the NPT, termed 'holdouts,' and ineligible therefore to acquire nuclear technology. The United States, incidentally, has been the main protagonist of non-proliferation, and is an original signatory to the NPT. Why then, did the United States take the extraordinary step to make India an exception to the NPT's provisions, and the injunctions of the Nuclear Suppliers Group (NSG), established to control and restrain nuclear technology transfers even to NPT signatories.

Many reasons can explain this American benevolence, like President Bush's personal inclinations alongside his policy to checkmate China and mould the Asian security architecture. China had sought, unsuccessfully, to obstruct the nuclear deal at that time. It encouraged dissenters in the NSG to question the propriety of the nuclear deal by making India an exception to its guidelines. A strong demarche by India and American pressure dissuaded China from continuing with its obstructive tactics. More insidiously, China had voiced its right to offer Pakistan a similar deal, despite the latter's appalling non-proliferation record. Indeed, China could hardly indict this appalling record after assisting its evolution. There is ample evidence that China supplied the design information for making a nuclear device to Pakistan, besides supplying

sensitive nuclear equipment and ballistic missiles, with their associated production technology.

The basic point worth stressing here is that Pakistan has been assiduously seeking a civilian nuclear deal from China, but also from the United States to gain parity with India. The Bush administration categorically refused to consider a US-Pak nuclear deal due to its proliferation concerns; read AQ Khan. The Obama administration has not been categorical, but has urged that China must seek prior approval from the NSG to wage its battle there. The US cannot pursue any other policy at this juncture with the NPT Review Conference in session. Whether China will bash on regardless is another matter. Chinese officials have argued that the supply of Chashma-3 and Chashma-4 was included in the earlier agreement of 1985 pertaining to the supply of Chashma-1 and Chashma-2. This position has been disputed by the United States and India. The Chinese reluctance to place this matter before the NSG only reflects

its lack of confidence in being able to persuade that body to concur, in appreciation of the blatant proliferation record of both Pakistan and China. Will the two partners go ahead to consummate their nuclear deal? Will China blink after creating a scare in the NPT Review Conference and establishing its centrality, if only in the spoiler role?

Apropos, the Indo-US nuclear deal is gaining adverse attention from the non-nuclear weapon states in the NPT. They have highlighted the iniquity of India being allowed to retain its nuclear weapons and gain access to nuclear technology, despite being a non-signatory to the NPT. The role of the United States is significant here. An

official statement by Washington reiterated the legal position that China must seek the NSG's concurrence before transferring the two nuclear reactors to Pakistan. But, at a recent Ministerial-level meeting in Washington between the two countries the United States appreciated Pakistan's energy needs and agreed to assist its conventional energy program. Did the Obama Administration also agree to China transferring the reactors to Pakistan, while objecting for the record? Speculative, perhaps? But, the answers to these questions will unfold very shortly.

How will a Sino-Pak nuclear deal reaching fruition after the Indo-US nuclear deal affect the NPT Review Conference? Hasten its demise? Watch this space.

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Two Summits; Conflicting Messages

M Shamsur Rabb Khan, Freelancer

The two summits in April 2010 – The Nuclear Security Summit in Washington and Nuclear Disarmament Conference in Iran; within a gap of four days has attracted world attention to the danger of nuclear weapons falling into the hands of terrorists, highlighting that a few countries possess them, while others are vying for them. The Washington summit focused on nuclear terrorism faced by the world currently due to the growing influence and spread of terror organizations. The Iranian conference, widely perceived to be a counterweight, attacked the US policies on nuclear disarmament and the Non-Proliferation Treaty (NPT), while asking for fresh initiatives on these issues. President Obama was seen engaged in gathering world opinion against the nuclear threat posed by the al Qaeda and other such groups and also Iran's nuclear ambitions at the 47-nation Washington summit. In contrast, the Supreme Leader, Ayatollah Khamenie, and the President, Mahmoud Ahmadinejad, warned that America's nuclear policy has placed the world in a dangerous situation, while encouraging the representatives of 60 nations to consider withdrawing from the NPT and starting a new organization.

By taking his speech in Prague in April 2009 a step further, Obama seems determined to secure nuclear materials around the globe within four years to keep them out of the grasp of terrorists. Without doubt, nuclear terrorism is the most imminent threat that the world faces today, and Obama's concerns are real and for which he hopes to mobilize global opinion. Ahmadinejad, on the other hand, accused the US of holding its own huge nuclear stockpiles intact while advocating non-proliferation to other countries. No doubt, Ahmadinejad's views have some substance. However, Obama's singling out Iran as the threat accords with the US policy initiated by his predecessor, making Iran the US's target of immediate attention. For example, in his meeting with the Chinese President, Hu Jintao, at the Washington summit, Obama focused less on finding ways to prevent terrorists from getting their hands on weapons-grade nuclear material than mustering support for tougher economic sanctions against Iran, and a possible attack upon Iran in the near future.

Iran's belligerent posture in the Tehran conference in criticizing the US could only heighten tension in the Middle East, bearing in mind the hostile relations between the US and Iran since 9/11. The Washington summit was unanimously united in keeping nuclear weapons out of the reach of terrorist organizations. The voices raised at the Tehran summit were no less significant, especially on the NPT, which the West led by the US has advocated for being signed and ratified by all nations. Though there was a policy shift this time at the Washington summit with the NPT getting less prominence, the Tehran summit highlighted it as the tool of the West to

deny it to the developing countries for acquiring their nuclear deterrent.

While Iran's nuclear programme was highlighted at the Washington summit as the possible threat, no mention was made of Israel's secret nukes, which prompted Iran to focus on the US's double standards. Besides, the 60-member summit at Tehran was urged to find ways to reach a consensus on securing the world from nuclear threats, with an emphasis by Iran on the nuclear arsenals of the US. However, Iran, in order to seek legitimacy for its own nuclear programme, attacked those countries that possess large nuclear arsenals while advocating that weaker nations should not to acquire these weapons. This posture could backfire on Iran, leading to collective action against it

On the positive side, both these summits on nuclear weapons protection and disarmament showed concerns but in different ways, and both could play a significant role in the outcome of the NPT Review Conference being held in New York. However, the conflicting postures of the two hostile nations, the US and Iran might put the real issues on the backburner, and lead to a more aggressive policy being pursued towards Iran. The message from Tehran will, without doubt, have an effect on the NPT review conference, with participating countries gaining a clearer vision. But the tussle between the US and Iran might jeopardize the required focus on the security of nuclear weapons.

The big challenge is to juxtapose the collective concerns at the two summits and work towards a safe and secure world appreciating the lurking dangers of nuclear weapons, whether it be from the terrorist organizations or the growing conflict between the US and Iran, which could prompt Israel jumping into the fray. Other nations like China, Russia and India have a bigger role to play both in securing nuclear weapons from reaching the wrong hands and in easing tensions between the US and Iran, so that the message from two summits could become the focus of global attention.

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The NPT Review Conference: A Backgrounder

Rekha Chakravarthi, Research Officer, Institute of Peace and Conflict Studies

The Treaty on the Non-Proliferation of Nuclear Weapons, (NPT) is a multilateral treaty aimed to stop the spread of nuclear weapons, while ensuring access to nuclear energy for peaceful purposes that will be subject to international safeguards. The NPT consists of eleven articles, with a commitment by the nuclear weapon states to work in good faith to achieve universal nuclear disarmament, which is made in Article VI.

At present, 189 countries are party to the treaty, which divides them into two categories – nuclear weapon states (NWS) and non-nuclear weapon states (NNWS). The NWS include states that had exploded a nuclear device before 1 January 1967, which includes the United States, Soviet Union (now Russia), United Kingdom, France and China. Only three states are non-signatories to the treaty including India, Israel and Pakistan, while DPRK withdrew from the treaty in 2003.

The NPT is considered the cornerstone of the global non-proliferation regime. Under the treaty, the NWS may retain their nuclear arsenals but are prohibited from transferring or assisting any NNWS from acquiring nuclear weapons. The NNWS are prohibited from building, acquiring or possessing nuclear weapons, but they can use nuclear energy for peaceful purposes; and must accept full-scope safeguards on all their nuclear facilities to be administered by the International Atomic Energy Agency (IAEA).

The treaty opened for signature in 1968 and entered into force in 1970. Article VII (3) of the treaty required that “five years after the entry into force of this Treaty, a (review) conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realized.” In addition, Preparatory Committee (PrepCom) conferences, that are meant to lay the groundwork for the Review Conferences, are held in each of the three years leading up to the RevCon.

Accordingly, the first NPT Review Conference (RevCon) was held in 1975 and subsequently one has been held every five years. Article X of the treaty further stipulated that twenty-five years after its entry into force, a conference would be held to determine the duration of the treaty. The Review and Extension Conference (1995) agreed to extend the treaty indefinitely.

The eighth NPT Review Conference will now be held from 3-28 May 2010 in New York. The purpose of this RevCon, like the earlier ones, is to review the implementation of the treaty. For the 2010 NPT RevCon, three PrepComs were

held in Vienna (2007), Geneva (2008) and New York (2009). The working papers, statements, and reports tabled during the PrepComs are used as recommendations to be negotiated at the RevCon; where the state parties must reach consensus on a Final Declaration containing detailed language on the implementation of the various articles of the treaty.

The first RevCon was held in 1975 (Geneva, 5-30 May). Igan Thorsson (Sweden) was the conference President, and there were 91 states parties to the treaty present, who were able to reach consensus on the final declaration urging the then NWS (United States, Soviet Union and United Kingdom) to comply with their disarmament obligations.

The second RevCon was held in 1980 (Geneva, 11 August-7 September). Ismat Kittani (Iraq) was the conference President and there were 112 state parties to the treaty. The conference failed to reach a consensus on the final declaration. Their differences primarily revolved around the implementation of Article VI. The NNWS held that the NWS had not fulfilled their obligations to halt the arms race and progress towards achieving nuclear disarmament.

The third RevCon was held in 1985 (Geneva, 27 August-21 September). There were 131 state parties to the treaty and Mohamed Shaker (Egypt) was the conference President. This RevCon was able to adopt a final declaration on establishing nuclear weapon free zones (NWFZ). There was concern over horizontal proliferation (Israel and South Africa) undermining the spirit of the treaty. The debate once again

focused on the lack of progress in moving towards nuclear disarmament. Apropos, discussions were centered on a Comprehensive Test Ban Treaty (CTBT).

The fourth RevCon was held in 1990 (Geneva, 20 August-14 September). Oswaldo de Rivero (Peru) was the conference President. 140 state parties to the treaty were present. The RevCon failed to adopt a final declaration due to lack of progress in implementing Article VI and the CTBT, and disagreements over negative security assurances being provided to NNWS, who also expressed regret that commitments made to assisting their peaceful use of nuclear energy were not satisfactory.

The fifth RevCon was the 1995 Review and Extension Conference (New York, 17 April-12 May). Jayantha Dhanapala (Sri Lanka) was the conference President with 178 states signatories to the treaty attending. This was the first post-Cold War conference after the disintegration of the Soviet Union. In addition, China and France joined the treaty as NWS taking their total number to five. The state parties failed to reach a

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consensus on the final declaration; but agreed to extend the treaty indefinitely under Article X.2 of the treaty. This was done by two decisions on “Strengthening the Review Process for the Treaty,” and “Principles and Objectives for Nuclear Non-Proliferation and Disarmament,” and one resolution on the Middle East.

The sixth RevCon was held in 2000 (New York, 24 April-19 May). Abdallah Baali (Algeria) was the conference President and 187 countries were present. This was the first review conference after 1985 to adopt a final document with Thirteen Practical Steps being adopted for taking systematic and progressive steps towards achieving nuclear disarmament. Concerns were expressed over North Korea's compliance with IAEA safeguards; India and Pakistan were urged to join the treaty after their nuclear tests conducted in 1998.

The seventh RevCon was held in 2005 (New York, 2 May-27 May). Sergio Duarte (Brazil) was the conference President and 188 state parties attended. This RevCon failed to reach an agreement on the final declaration. The major issues in contention were Iran and North Korea's nuclear weapons programme, nuclear terrorism, nuclear black marketing, negative security assurances, nuclear disarmament, and peaceful uses of nuclear energy.

The third PrepCom for the 2010 Review Conference was held in May 2009, but was unable to agree on substantive issues. However, with the revival in the global discourse on nuclear disarmament, combined with the groundwork done by the Obama administration, there is general optimism that the 2010 RevCon will salvage and strengthen the non-proliferation regime.

Modular Nuclear Reactors and Breeder Technology

Report of the IPCS Panel Discussion held on 11 May 2010

Chair: Professor Amitabh Mattoo, School of International Studies, JNU

Speaker: PR Chari, Research Professor, IPCS

Discussant: Professor R Rajaraman, Emeritus Professor of Physics, JNU

Introduction: Professor Amitabh Mattoo

The Non-Proliferation Treaty (NPT) stands on three pillars. The first is non-proliferation; state actors within the NPT, both nuclear weapons states and non-nuclear weapon states, have undermined this pillar. The second pillar is Article VI, nuclear disarmament; there has been some progress including the New Start Treaty. Despite the momentum given by President Barack Obama, nuclear weapons are here to stay, even though the Nuclear Posture Review (NPR) has made qualifications on when nuclear weapons would be used as part of American strategic policy. Whether Article VI will be translated into reality seems distant. The third pillar was a part of the bargain, where non-nuclear weapon states would be given access to civilian nuclear energy and technological advances made. Because civilian nuclear energy and the technology that produces nuclear weapons could not be separated easily, access to civilian nuclear energy was not provided to the non-nuclear weapon states. However, a debate has emerged recently about producing proliferation resistant nuclear reactors.

Professor PR Chari

President Obama's style is marked by rhetoric and retreat. He announced the agenda of Global Zero in Prague, but at the same time said it was not likely to happen in his lifetime. He qualified his statements in Prague later by saying that nuclear weapons would be required for providing nuclear deterrence and, still later, by saying that nuclear weapons would be required for the foreseeable future.

Over the last month, there have been several developments; the NPR, which seeks to reduce the salience of nuclear weapons in American strategy; a new START agreement which seeks to reduce long-range missiles in the American and Russian arsenals; and, finally, the Nuclear Security Summit which has identified the safety and security of nuclear materials as representing the present danger to nuclear non-proliferation. Differences have already appeared in the 2010 NPT Review Conference, like the issue of a nuclear weapons free zone in the Middle East; and criticism of the Indo-US deal.

Two main technological challenges to the non-proliferation regime, however, are not being recognized. The first is fast breeder technology where an atom of plutonium 238 (Pu238) fissions when it is struck by a neutron, which produces plutonium and another isotope of uranium which fissions further into plutonium 239 (Pu239). Pu239 is the isotope of plutonium used for fission in atomic weapons and is also usable as fuel in nuclear reactors. It has a half-life of 24,000 years; after that time the radioactivity of Pu239 would reduce

by half and it would require an additional 24,000 years to become a quarter.

There are five ways in which using breeder technology for reactors is a challenge; firstly, the capital costs are extremely high, at least 25% more than water cooled reactors amounting to \$1,000 per kilowatt of power generation; secondly, safety issues are a concern, these reactors use a sodium coolant to make it efficient, but even a minor leak could rupture the tubes and lead to a major sodium-water fire; thirdly, plutonium breeder reactors produce more plutonium than they consume adding to proliferation problems; fourthly, breeder reactors need recycled plutonium, which can also be used for making nuclear weapons; fifthly, breeder reactors are useful to produce weapons grade plutonium directly, as done by France. India's 500MW prototype fast breeder reactor is expected to go on stream this year. It can make, according to theoretical calculations, about 90kg weapons grade plutonium per year if the radial blanket is used, but if the radial and axial blankets were to be used then it can make up to 140kg per year. These figures are important because it takes about 3 to 5kg for one nuclear weapon. Both the Bhabha vision and the Sarabhai plan have emphasized that the end-goal of India's nuclear program is premised on breeder reactors.

The other technological challenge is small modular reactors (SMR) which is being promoted by the United States. President Obama has requested \$39 million for a new program to get SMR designs licensed for widespread commercial use. SMRs have compact designs, could be made in factories and transported to sites by truck or rail, they reduce capital costs and construction time, and increase flexibility by being able to be added or withdrawn as demand increases or decreases. Therefore, they are suitable for small electrical grids or for being established in isolated places or for replacing fossil fuel plants. The downside of SMR's is that the level of expertise that is required for their operation is no less than what is required to run a large commercial plant; besides the safety and security issues multiply due to their scattered locations. There are personnel issues that also arise from the need to post qualified persons to remote places, which makes it difficult to recruit them.

There is a reference to proliferation resistant reactors in the work plan issued after the Nuclear Security Summit. What are the options? First, reactors using Highly Enriched Uranium (HEU) could be redesigned to use Low Enriched Uranium (LEU). Second, instead of using HEU mixed uranium and plutonium oxide (MOX) could be as fuel, which cannot be used for making nuclear weapons. The problem with using MOX is that very high purities are required, making the fuel very expensive to manufacture. Third, the Global Nuclear Energy Partnership (GNEP) launched in 2006 envisages using fast neutron reactors to make spent reactor fuel less radioactive. The problem again is high costs, marginal benefits and very long time periods.

Professor R Rajaraman

Modular reactors are factory fabricated modules and connecting the modules greatly reduces the construction work required while increasing the ability to deploy these reactors in remote regions. Unlike large reactors, these reactors take half the time to build with much less cost. Being smaller in size increases their flexibility for utilities since they could add units as demand changes; and are ready to 'plug and play' on arrival.

Modular reactor is a common name for about fifteen different designs and typically generates 100MW of power. According to the IAEA the global demand for these could reach anywhere from 500 to 1,000 by 2040. This raises issues about whether the world can manage to safely keep these reactors and its output. A US based group, General Atomics, is developing one design, a gas turbine helium reactor. The US is not the only country with interest in SMR's. The most advanced modular reactor project is in China, where they are preparing to build 200MW SMR's. Since 1976 Siberia has housed four SMRs each producing 11MW of electricity.

South Africa has worked on a 200MW Pebble Bed Modular Reactor (PDMR). It was projected as the new generation reactor, but the plan to commercially make these reactors has unfortunately been abandoned owing to technical and economic reasons. The PBMR essentially comprises a steel pressure vessel which holds the enriched uranium dioxide fuel encapsulated in graphite spheres. The system is cooled with helium and heat is converted into electricity through a turbine. It requires less expertise and its reactivity feedback is negative making it safer to use than breeders.

Breeder reactors are designed to breed fuel by producing more fissile material than it consumes. Neither the breeder reactor nor the fuel rods are a proliferation danger; it is the reprocessing unit that separates the plutonium which is a proliferation problem. Three countries have been using this technology, France, Japan and Russia. Before the Indo-US deal the need for breeders and the three-stage plan formulated by Dr. Homi Bhabha were a priority. Now, the scarcity of uranium and the need to use the abundant thorium resources is no longer an issue. India can continue the breeder programme and if it is not successful or commercially viable then it can be phased down.

Breeders have a history of not being successful apart from the scientific analysis. Reactor-grade plutonium is put into a breeder, which is not ideal for bombs, and out comes Pu239, which is ideal bomb material. It is not just the quantity that is replacing the earlier plutonium but you are getting better bomb material coming out. In a sense that makes the danger even more. One must remember that the breeder and the fuel rods are not a proliferation danger; it is the reprocessing unit, the process of chemically separating plutonium from other radioactive elements in the rod, which

makes it a proliferation problem. This danger exists even in ordinary reactors, although it is true that breeders produce better weapon material than ordinary reactors do, even reactor-grade plutonium is weapon material. The danger exists as much in ordinary reactors as in breeder reactors, but all these dangers only come after reprocessing.

Discussion

Modular Nuclear Reactors

- The South Africans abandoned the PDMR project due to technical reasons and chose not to sink more money into it. Now a Memorandum of Understanding (MOU) has been signed between the Chinese and the South African developers of pebble bed technology to collaborate on this project.
- Both safety and security issues are involved and if this cannot be ensured then there is a proliferation risk. Whether it be a large or small nuclear reactor it requires the same quality of technical personnel for running them. To persuade qualified scientists, engineers and technicians to relocate to remote places raises serious personnel issues.

Breeder Technology

- Breeder reactors do not just breed more fuel but can also be operated as burners.

Indian Context

- Breeder reactors form the second step in the three-stage strategy for nuclear power generation that is being pursued by India since the 1950's. Following the Indo-US nuclear deal this strategy seems to have been abandoned.
 - The problem in transporting reactor components is that India does not have adequate roads or bridges for their transportation from their places of manufacture. That is one reason why most of India's atomic reactors are located along the coastline so that they can be brought by ship, and cooling becomes easy using sea water. This is why the modular aspect becomes critical since these reactors are small and can be made in a factory and transported.
 - India is proficient in building Pressurized Heavy Water Reactors (PHWR) since this is the original design provided by the Canadians, also called 'CANDU' reactors. After the 1974 Pokhran explosion the Canadians withdrew their support, largely under American pressure. Thereafter India has perfected this technology and has upscaled 220MW to 550MW reactors. The relatively higher plutonium content of spent fuel in PHWR reactors has led to proliferation concerns.
 - India has designed a new version of Advanced Heavy Water Reactors (AHWRs). These reactors are designed to be fueled by low enriched uranium along with thorium. Ordinary light water reactors are run with low enriched uranium as well; the thorium technology is the extent of the difference. The contaminants that are produced needs to be looked at to see whether it is good for proliferation. For instance, thorium makes Uranium 232, a radioactive substance, that is the sense in which thorium is considered proliferation unfriendly.

Major Events in South Asia - March 2010

Nuclear Disarmament/Proliferation/Security

PAKISTAN

3 May 2010

In talks, China to press for U.S. support on Pakistan nuclear deal

China will press for American support for its plan to sell two nuclear power reactors to Pakistan, in Monday's "sub-dialogue on South Asia" with United States officials in Beijing. The U.S., diplomats and analysts say, is likely to indicate it will not obstruct the controversial deal. In return, the U.S. will ask for greater Chinese support for sanctions on Iran over its nuclear programme. But both governments have, so far, remained tight-lipped on the agenda for Monday's talks between U.S. Assistant Secretary for South and Central Asian Affairs Robert Blake and Chinese Vice-Foreign Minister Wang Guangya. The recently initiated dialogue on South Asia takes place against a backdrop of rising concerns in India over the Barack Obama administration appearing to encourage China to play a greater role in the region. Following Mr. Obama's visit to Beijing in November, the U.S. and China pledged to "to strengthen communication, dialogue and cooperation on issues related to South Asia," in a joint statement which angered Indian officials. (*The Hindu*, 3 May 2010)

8 May 2010

Pakistan says nuclear safety concerns addressed

Pakistan is a crucial ally in the U.S.-led fight against al Qaeda and Taliban and President Barack Obama last month expressed confidence over the security of Pakistan's nuclear programs. However, militant attacks across the country, even on supposedly secure military installations, have raised fears that militants could penetrate nuclear facilities. But Prime Minister Yusuf Raza Gilani said he had "laid to rest" all concerns about the safety of Pakistan's nuclear program at a summit hosted by Obama in Washington last month, and the world had "expressed satisfaction" over Pakistan's nuclear security arrangements. "There is now a need for the world to move on beyond safety and security concerns," Gilani said while addressing military officials at the test-firing of two short-range, nuclear-capable missiles. "It is time for the world to recognize Pakistan as a de jure nuclear power with equal rights and responsibilities," the military quoted him as saying in a statement. (*Reuters*, 8 May 2010)

11 May 2010

US studying China-Pakistan nuclear deal

The United States said it was carefully reviewing China's plans to build two civilian nuclear reactors in Pakistan, urging all nations to respect non-proliferation commitments. The China National Nuclear Corporation has agreed to finance two more civilian reactors at the Chashma site in Pakistan, despite fears abroad about the safety of nuclear material in the Islamic nation. China earlier built two reac-

tors for Pakistan. But Beijing in 2004 entered the Nuclear Suppliers Group, a cartel of nuclear energy states that forbids exports to nations lacking strict safeguards by the International Atomic Energy Agency (IAEA). US Deputy Secretary of State James Steinberg said that discussions were underway about the issue and the United States has not "reached a final conclusion." "But it's something we're obviously looking at very carefully," Steinberg said in response to a question at a forum at the Brookings Institution. "I think it's important to scrupulously honor these non-proliferation commitments," he said. "We'll want to continue to engage on the question, about whether this is permitted under the understandings of the IAEA." (*Agence-France Presse*, 11 May 2010)

15 May 2010

Obama acknowledges Pak nuke safety: Gilani

Prime Minister Yousaf Raza Gilani said on Saturday that US President Barack Obama has acknowledged that Pakistan's nuclear assets are safe. The prime minister made these comments while speaking to a delegation of German journalists in Lahore. Gilani called on the international community to help Pakistan in its fight against terrorism. He noted that there has been no other example of a major displacement as was witnessed in the aftermath of the army's operations in the northwest. He stressed that the European markets must be made accessible to Pakistan, adding that the request will be raised with the European Council in Brussels. (*The Express Tribune*, 15 May 2010)

INDIA

2 May 2010

Global nuke centre to train security forces

The Global Centre for Nuclear Energy Partnership, announced by Prime Minister Manmohan Singh last month, will be set up in Delhi or its neighbourhood and involve first-of-its-kind training of security forces in the atomic field. The centre, intended to be a state-of-the-art institute with four schools, will be open to nationals of any country to participate in research and development of design systems that are secure, proliferation resistant and sustainable. Dr. Singh announced the setting up of the centre at the Nuclear Security Summit on April 12. The centre will come up in Delhi or its adjoining areas like Noida or Gurgaon, sources said, adding the process is on to locate a specific place and acquire land there. It will consist of four Schools dealing with Nuclear Security, Advanced Nuclear Energy System Studies, Radiation Safety and application of Radioisotopes and Radiation Technology in areas of health-care, agriculture and food. (*The Hindu*, 2 May 2010)

3 May 2010

Hazards of government neglect (A Gopalakrishnan)

Recent radiation exposure incident in the premises of scrap iron dealers of Delhi, 11 persons were identified to have received high levels of radiation, from radioactive sources which entered these shops. The entire incident is being investigated in secrecy by the Atomic Energy Regulatory Board (AERB), the Department of Atomic Energy (DAE) and other agencies under the Atomic Energy Commission (AEC). The stipulations

relating to nuclear safety in India were originally brought out succinctly in the Atomic Energy Act (1962). In particular, Section-16 of that Act requires “the Central government may prohibit the — export and import — of any radioactive substances without its written consent.” Section-17 of the Act states “the Central government may, as regards any premises — in which radioactive substances are — stored or used, make such provision by rules — necessary to prevent injury being caused to the health of persons employed at such premises — either by radiations, or by the ingestion of any radioactive substance. (*The New Indian Express*, 3 May 2010)

4 May 2010

Mayapuri: Disaster protocol not clear, says health minister

Even as AERB and BARC officials scurry from one place to another in search of the rest of the gamma irradiation machine that Delhi University callously sold off and which has so far killed one man and left six others in the hospital, health minister Kiran Walia on Monday said that the guidelines of the National Disaster Management Authority (NDMA) are not clear about the protocol to be followed after the Mayapuri radiation incident. This is directly in contradiction to assertions on the part of NDMA that the city government has failed to follow the guidelines laid down by the authority for CBRN (chemical, biological, radiation and nuclear) disasters. Walia said: “Disaster management is not a subject that comes under me, it is looked after by the chief secretary. After interacting with officials over the last few days, I have realized that there is a lack of clarity about the role to be played by the different agencies and the government. (*The Times of India*, 4 May 2010)

5 May 2010

UGC sets up panel to frame guidelines on use of nuclear substance

In the wake of radioactive exposure in Delhi, UGC on Tuesday set up a five-member panel headed by an AIIMS professor for framing guidelines for the use, storage and disposal of radioactive and hazardous chemicals. The committee has been given a month’s time to prepare the guidelines keeping in view all safety guidelines framed by the regulating agencies. Besides Prof. G.K. Rath from AIIMS, other members of the committee are Dr. A.K. Kohli, Dr. S.P. Kale and Dr. H.S. Kushwaha from Bhabha Atomic Research Centre (BARC) and Dr. D. D. Deshpande from Tata Memorial Centre. “The guidelines will give a formula on how to handle all types of hazardous material, including radioactive and chemical materials used in scientific labs in universities, colleges and other institutions,” UGC Chairman Sukhadeo Thorat said. Mr. Rath is from the department of radiotherapy from AIIMS and has been associated with Atomic Energy Regulatory Board (AERB). (*The Hindu*, 5 May 2010)

Indian nuclear submarines: a case of nuclear proliferation (Bassam Javed)

Since independence, the Indian leadership has been utilis-

ing its navy as an effective tool to conduct its diplomacy and achieve strategic dominance of the Indian Ocean. In pursuance of the same, Jawaharlal Nehru announced on June 26, 1946: “As long as the world is constituted as it is, every country will have to devise and use the latest devices for its protection. I have no doubt India will develop her scientific researches and I hope Indian scientists will use the atomic force for constructive purposes. But if India is threatened, she will inevitably try to defend herself by all means at her disposal.” Mrs Indra Gandhi (late) during her first stint as the Prime Minister of India had tasked the Indian Navy to avail all means to ensure that India enjoys the dominance over the Indian Ocean. Today, India possesses the largest Navy in the region with many of its surface, sub-surface and air platforms fitted with the latest inventory of nuclear capable tactical, short and intermediate range ballistic missiles besides the other foreign supplied lethal weapons at sea. (*The News*, 5 May 2010)

Still a long, weary road to disarmament (Sumit Ganguly)

In 1953, Prime Minister Jawaharlal Nehru had co-sponsored a resolution in the United Nations General Assembly, calling for a “standstill agreement” on all nuclear testing. Nehru saw the cessation of nuclear testing as a stepping stone to universal nuclear disarmament. But, during the Cold War, attempts to bring nuclear tests to a close proved futile. The nuclear-weapon states carried out a plethora of tests to ensure the reliability and viability of their respective nuclear stockpiles. More than half-a-decade after the Cold War’s end, a draft of the Comprehensive Test Ban Treaty (CTBT) was finally voted on at the United Nations General Assembly (UNGA). That was in 1996 and it received overwhelming support. But for a variety of complex domestic policy concerns, the US Senate refused to ratify the treaty; it is yet to come into force. India, which had significant reservations about the draft treaty, voted against it in the UNGA. In the light of President Obama’s call to rid the world of nuclear weapons, the signing of a new arms control agreement with Russia, his convening of a Nuclear Security Summit in Washington, DC, last month and the upcoming review of the Nuclear Non-proliferation Treaty (NPT) this month, there is little question that the United States will again issue a renewed call to implement the CTBT. (*The Times of India*, 9 May 2010)

13 May 2010

‘Human error’ cause of radioactive spill at BARC

A staff member at the Bhabha Atomic Research Centre (BARC) in Trombay was mildly exposed to radiation on Tuesday because of an accidental radioactive spill. BARC withheld the name of the person, who is a scientist at the institute. The spill occurred because the container in which the solution was kept had not been sealed. Terming it a “human error”, officials at the department of atomic energy (DAE) said the incident occurred between 4 pm and 5 pm on Tuesday, when the container was being transferred from the radiochemicals experiment centre in the fuel-reprocessing division to the measurement laboratory. BARC’s safety review committee will look into the matter. “One person in the laboratory found that some liquid from the container had spilled. On testing, the hands of the person who handled the container showed contamination.

The hands were then decontaminated," said DAE spokesperson S.K. Malhotra. "The incident is very minor, with no safety consequences," said R.K. Sharma, head of media relations at BARC. (*The Hindustan Times*, 13 May 2010)

17 May 2010

India tests nuclear-capable missile: official

The Indian military successfully tested a nuclear-capable, medium-range ballistic missile off its eastern coast on Monday, a defence official said. The surface-to-surface Agni-II, which can deliver a nuclear warhead to targets within a range of 2,500 kilometres (1,560 miles), was fired from a mobile rail launcher on Wheeler Island off the coast of Orissa state. The Agni-II has already been inducted into the services and Monday's "user test" was carried out by the army's Strategic Forces Command. "The user trial of the missile was successful and matched all mission objectives," said S.P. Dash, the director of the test range. It was the first outing for the Agni-II since the failure of a much-hyped night launch last November. The missile, which is capable of carrying a one-tonne conventional or nuclear warhead, is one of a series being developed by India's Defence Research Development Organisation as a deterrent strategy against nuclear-armed neighbours China and Pakistan. (*Agence France Presse*, 17 May 2010)

18 May 2010

Rajiv's nuclear plan (Rajiv Dogra)

More than two decades ago, Rajiv Gandhi had offered what still remains the most viable and comprehensive global nuclear disarmament plan. Nobody remembers that — nor his efforts which placed India in the vanguard of the IT revolution and triggered our potential Public memory is notoriously fickle. It becomes collective amnesia if the attention of the people is diverted for one reason or the other in a different direction; towards other attractions and new prophets. But must we be forgetful of the past to the point of ungratefulness? A few months back US President Barack Obama received the Nobel Prize for his stated commitment that he proposes to work towards making the world free of nuclear weapons. Rarely, ever before, have people received such a high honour for a statement of intent. Now, he seeks to make his name synonymous with global nuclear disarmament to try and secure his place in history. And the world is paying him a lot of attention; witness for example the gathering of nearly 50 world leaders recently in Washington. (*The Pioneer*, 18 May 2010)

20 May 2010

Indo-Pak nuclear weapons pops up during New START debate

The nuclear arms race between India and Pakistan has figured during a Congressional hearings on the New START treaty between US and Russia. For the past two days, during hearings on New START treaty held by the Senate Foreign Relations Committee, lawmakers wanted to know from top US officials and experts, who were asked to testify before it to give their assessment of this treaty on other nuclear weapon countries like India and Pakistan and how

it can motivate the two countries to reduce their nuclear stockpile. "I wonder if you might comment on reduction in counter proliferation efforts more generally, that this agreement might have an effect on. I think specifically of India and Pakistan, for instance. To what extent might this agreement have the positive impact on causing other nations to begin to move in this direction?" asked Senator Chris Dodd on Tuesday. Secretary of State Hillary Clinton refrained from directly mentioning India and Pakistan in her answer, but did say that the US would soon explore the possibility of having a similar kind of dialogue with China. (*The Hindustan Times*, 20 May 2010)

Nuclear Energy/Environment

11 May 2010

Tokyo's nuclear wisdom: 'Monju' breeder boosts India's plutonium faith (Raja Menon)

Japan's controversial decision last week to restart an advanced nuclear reactor programme, which had been mothballed for nearly a decade and a half, will be seen in India as a vindication of its long-standing commitment to plutonium as a source of energy. While Japan's choice is being assessed around the world, especially in East Asia, Delhi has every reason to support Tokyo since India and Japan are on the same side of the great global divide on breeder reactors. After all it is not often and Delhi and Tokyo find themselves in agreement on nuclear issues. Critics of Japan say the Japanese breeder move adds yet another layer of complexity to Asia's nuclear geopolitics and could not have at a worse time than in the middle of a conference on the Non-Proliferation Treaty (NPT), now under way at the United Nations in New York. Tokyo has been deeply concerned about the nuclear weapons programme of North Korea and increasingly anxious about rising Chinese power and the tensions in the alliance with the United States. (*The Indian Express*, 11 May 2010)

India's new fast-breeder on track, nuclear power from September next

With another critical component set to join the Rs.5,600-crore (\$1.25 billion) fast-breeder reactor at Kalpakkam, some 80 km from Chennai, scientists at the 500 mw nuclear power plant said the project will be up and running, as scheduled, by September next year. The component that will be installed this week is called a thermal baffle, a cylindrical safety vessel that is part of the crucial equipment, which helps in keeping the sodium used in the plant cool. "The 60-tonne thermal baffle, measuring some 12-metre in diameter and more than six metres in height, is made of stainless steel and is expected to be installed inside the main vessel this week," Prabhat Kumar, project director of the power plant, told IANS. The sodium-cooled fast reactor, designed by the Indira Gandhi Centre for Atomic Research (IGCAR), has three vessels -- a safety vessel, a main vessel and an inner vessel, all of which are critical to keep the fast-breeder reactor cool. The baffle will go into the main vessel, also made of stainless steel, weighing some 200 tonnes, which will also hold the coolant liquid sodium, the reactor's core containing the fuel, and other components essential for nuclear power generation. (*The Hindustan Times*, 11 May 2010)

20 May 2010

India leading research on Thorium: US official

India is the leading country in the research of Thorium, a naturally occurring radio active metal, a US official has said, even as there is a distinct possibility of its use in nuclear reactors. "Thorium is only used in an experimental and a research way, but in theory, it could be used for reactors. I think the country that's leading the research effort is India, actually, which has large amounts of thorium and so they're very interested in it," Warren P Miller the Assistant Secretary Energy (Nuclear) said. In his testimony before the House Science and Technology Committee, Miller said in his personal opinion the uranium resource will not be a showstopper for nuclear energy. "There's also the Thorium possibility. Thorium is actually more prevalent in the crust than uranium is worldwide. (*Press Trust of India, 20 May 2010*)

Nuclear Cooperation/Treaties/ Agreements

1 May 2010

India, Japan to work on civil nuclear pact

In a measure of how far India and Japan have travelled together, both countries will now work on a civil nuclear agreement, probably the most significant one after the India-US deal. The decision was firmed up during a meeting between Montek Ahluwalia, deputy chairman of Planning Commission, and Masayuki Naoshima, Japan's minister for economy, trade and industry, during the fourth energy dialogue. A joint working group on civil nuclear cooperation has been set up with Gautam Bambawale, joint secretary, east Asia in the MEA, leading the Indian side. A joint statement after the energy dialogue said, "The two ministers decided to establish a nuclear energy working group under the energy dialogue to exchange views and information on their respective nuclear energy policies from the energy, economic and industrial perspectives. They welcomed that the first meeting of the working group is being held right after the energy dialogue." (*The Times of India, 1 May 2010*)

4 May 2010

Indian American offers US firms support for n-plants

A leading Indian-American business firm, which has for years provided technical support services to several US government agencies and fortune 500 companies, is offering to help US firms set up nuclear power plants in India. "We would certainly like to consider that possibility. The capacity and capability are there with ASR," Rao S. Anumolu, president and CEO of ASR International Corporation, said in an interview at his Long Island, New York, corporate office. Nuclear power can be a predominant resource for India's needs for the coming decades, he said, and "if the US government gives us permission, we believe we can play a reasonable role in initial planning, augmentation and also making sure that the deal is working correctly from this end". Incorporated in 1986, the proprietary con-

cern provides "cost effective, consistent, high quality world class" technical support services in areas of quality assurance, supply chain, IT, engineering and logistics. (*The Economic Times, 4 May 2010*)

India to stay out of NPT review conference that begins today

Over 150 nations, including Iran, will get together for an international review of the Non-Proliferation Treaty, but India will not be part of the deliberations during which the US is expected to push non-signatories to sign the pact. The conference on NPT review will kick off here today and the Iran-West showdown over Tehran's nuclear programme is likely to dominate the proceedings. India, which is not a signatory to the NPT has decided to stay out of the conference. "We are not parties to the NPT and we will not be participating," an official at the Permanent Mission of India to the UN told PTI. He said India would not be represented in the conference in any capacity not even as an "observer" country. The NPT review conference is held every five years to assess the progress in reaching the goal set out in the 1970 treaty to disarm and stop the spread of nuclear weapons. India, Pakistan and Israel have not signed the treaty and have been nudged by countries like US to sign it. (*Daily News and Analysis, 4 May 2010*)

5 May 2010

PM speaks to Sushma on n-bill, BJP says redraft it

Senior Bharatiya Janata Party (BJP) leader Sushma Swaraj said Tuesday that Prime Minister Manmohan Singh had spoken to her on the nuclear safety bill and indicated that her party will not object to its introduction in parliament if the government redrafts it to increase the liability of nuclear plant operators in case of an accident. In her valedictory remarks at the conference on "Democracy: Challenges of Consensus Building in India" organized by the Jagran Forum, she said the prime minister had told her not to oppose the bill at the introduction stage. She said the prime minister told her at a function to unveil a portrait of former prime minister Chandrashekhar Tuesday that her party could raise its points and objections to the bill before the standing committee to which the bill would be referred. Swaraj, the leader of opposition in the Lok Sabha, said that either the liability clause for plant operators and equipment suppliers should be raised to international level of about Rs.2,100 crore or the cap placed on their liability should be removed. (*Indo-Asian News Service, 5 May 2010*)

US Energy Secretary delegated powers on Indo-US Nuclear Act

US President Barack Obama has delegated some of his authority to Energy Secretary to report to the Congress about implementation of the US-India Nuclear Cooperation Approval and Non-proliferation Enhancement Act. "I hereby delegate to you the certification and reporting functions conferred upon the President by section 201(b) of the United States-India Nuclear Cooperation Approval and Nonproliferation Enhancement Act (Public Law 110-369)," Obama said in a memorandum to the Energy Secretary. The United States-India Nuclear Cooperation Approval and Nonproliferation Enhancement Act (Public Law 110-369), was signed into law by the then US President

George Bush on October 8, 2008. Under Section 201 (b), the US President is mandated to submit to the US Congress procedures regarding arrangement on reprocessing a detailed description, including the text, of such proposed subsequent arrangement. The president is also asked to submit a certificate to the Congress about the US' efforts to ensure that any other nation that permits India to reprocess or otherwise alter in form. (*The Hindustan Times*, 5 May 2010)

10 May 2010

India, Japan working on nuclear deal to boost 123 Agreement

India and Japan are quietly working on an inter-governmental agreement on civilian nuclear energy so that the 123 Agreement between India and the US, currently in the last lap of political negotiation before the US Congress, can be fully implemented on the ground in India. According to the broad contours of this agreement, New Delhi will promise not to conduct any more nuclear tests in exchange for Japanese permission to its companies, Hitachi, Toshiba and Mitsubishi to go ahead and partner with US and French companies seeking to build civilian nuclear plants in India. The India-Japan agreement, in fact, very much mirrors the 123 Agreement between India and the US. New Delhi's promise not to conduct any nuclear tests in the Indo-US nuclear deal is also accompanied by the vow that it will return all material and equipment to the US in case that happens. In a little noticed development last week in Delhi, the ongoing energy dialogue between Planning Commission Deputy Chairman Montek Singh Ahluwalia and the powerful Japanese minister for economy, trade and industry, Masayuki Naoshima, resulted in the creation of a sixth working group on civilian nuclear energy, which also had its first meeting the same afternoon. (*The Business Standard*, 10 May 2010)

11 May 2010

India sees nuclear business opportunity in Kazakhstan

External affairs minister SM Krishna will fly to Kazakhstan on Tuesday for talks with key leaders of the Central Asian Republic. On top of the agenda will be to finalise discussions on an inter-governmental agreement on nuclear cooperation. India is planning to build small and medium sized nuclear power stations in Kazakhstan once the inter-governmental agreement is finalised. An official of the Nuclear Power Corporation will be part of the minister's delegation. A team of top Indian businessmen are accompanying Krishna hoping to benefit from a multi-billion dollar industrialisation project chalked out by Kazakhstan. Officials, however, made it clear that the process would take its time as there are some loose ends which need to be tied up to prepare a deal, very much in line with the one signed with Russia. Building nuclear power stations in smaller countries in the neighbourhood is one of the benefits of the India-US civil nuclear agreement and the exemptions granted to India by the Nuclear Suppliers Groups. (*Daily News and Analysis*, 11 May 2010)

A losing proposition (Sitaram Yechury)

On the last day of the budget session of Parliament, the government hurriedly introduced the Civil Nuclear Liability Bill amid largescale protests by the Opposition. The Left had opposed the introduction of the Bill itself on the grounds of violation of Article 21 of the Constitution, which guarantees protection of life and personal liberty. Former Attorney General Soli Sorabjee says, "In view of Supreme Court judgements which are part of Indian jurisprudence and whose thrust is for the protection of victims of accidents as part of their fundamental rights under Article 21 of the Constitution there is no warrant or justification for capping nuclear liability." However, it is precisely such a cap that the Civil Nuclear Liability Bill introduces. The proposed Bill has sought to limit all liability arising out of a nuclear accident to only 300 million Special Drawing Rights (about \$450 million) and the liability of the operator only to Rs 300 crore. The difference between \$450 million and Rs 300 crore (about \$67 million) is the government's liability. Given that a serious accident can cause damage in billions, the small cap of \$450 million that's been proposed shows the scant regard the UPA has for the people. (*The Hindustan Times*, 11 May 2010)

Nuclear deal to be sealed with Argentina during MoS visit

In a bid to indicate to Argentina its keenness for cementing relationship in the energy sector, minister of state for external affairs Preneet Kaur will visit Argentina to seal the civil nuclear cooperation deal, which has received approval from the Cabinet. The minister will visit capital Buenos Aires from May 23-27. Senior officials in the MEA told FE, "The Civil Nuclear Agreement with Argentina will be inked during the minister's visit to the capital." The minister accompanied by senior officials will meet foreign minister Jorge Taiana and industry and tourism minister Debora Giorgi and discuss opportunities for bilateral cooperation in various sectors such as science and technology. The minister is also scheduled to watch a football match. Argentina now becomes the seventh country with which India would have signed a civil nuclear agreement following the lifting of a 34-year-old ban on nuclear commerce in September 2008 by the 45-nation Nuclear Suppliers Group. The agreement, which was signed during the visit of the President Cristina Fernando de Kirchner here in October 2009 has received Cabinet approval now and Kaur's signing the agreement in Argentina will lead to its operationalisation. (*The Financial Express*, 24 May 2010)