

Of safeguards and India's needs

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Interview with Anil Kakodkar.

There was no way India could have compromised on excluding its Fast Breeder Test Reactor (FBTR) and 500 MWe Prototype Fast Breeder Reactor (PFBR) from safeguards, according to Dr. Anil Kakodkar, Chairman, Atomic Energy Commission, and Secretary, Department of Atomic Energy (DAE). "It was a logical position.... I am glad we finally reached an agreement," Kakodkar said in an interview to Frontline on March 12 in Mumbai. He was talking about the agreement between Prime Minister Manmohan Singh and United States President George W. Bush, in New Delhi under which India has to separate its civil and military nuclear facilities. Excerpts from the interview:

What is the significance of India's insistence that its FBTR and PFBR, which are only for research and development and power generation, should not come under safeguards? Breeders are not necessary for India's nuclear deterrence.

The development of Fast Breeder Reactor (FBR) technology and the development of its associated fuel cycle technology have to go hand in hand because breeders have to operate in a closed-cycle mode. In the development of breeders, we have to go through the evolution of several fuel cycle technologies, not one. For example, the PFBR will initially be on the mixed oxide fuel system. We shall have to reprocess and re-fabricate the mixed oxide fuel. Then we want to take it to the next stage of development where we have to develop the metallic fuel. We then have to talk about the fuel cycle for metallic fuel. Later, about the thorium fuel cycle. So there is an intimate link between the development of FBR technology and the development of associated reprocessing and re-fabrication technology.

Our infrastructure for fuel cycle activities is rather small now. That is also intimately linked to the strategic programme. So the PFBR and the FBTR cannot be brought under safeguards because they are closely associated with the strategic programme through the fuel cycle linkage.

The U.S. insisted that we should put the PFBR and the FBTR under safeguards. How did it give in?

We made our position quite clear on this right from the beginning, even soon after the July 18, 2005 Joint Statement [by Manmohan Singh and George W. Bush]. It was a logical position. In fact, there was no way it could have been compromised. I am glad we finally reached an agreement.

If everything falls in place, that is, the U.S. adjusts its domestic laws and the Nuclear Suppliers' Group [NSG] changes its guidelines to sell light water reactors (LWRs), enriched uranium and natural uranium to India, where do we go from here?

We have an on-going programme and that will continue as planned. In our programme, we also have kept a place for imported LWRs as additionalities. Now there is a chance

that this objective can be realised. If all goes well, we can even hope to have a much larger capacity of LWRs compared to what we had planned earlier.

What will be the capacity?

In the programme of 20,000 MWe of nuclear power by 2020, we had provided 8,000 MWe of LWRs capacity. Hopefully, that can be realised now, and perhaps even a larger capacity.

Where do we stand now in terms of building of reactors and the supply of fuel?

The domestic programme will continue. That means, we will continue with the construction of the Pressurised Heavy Water Reactors (PHWRs) and the FBRs. Right now, we are constructing five PHWRs, one PFBR and two LWRs. We also have to take up construction of more PHWRs as part of the pre-defined programme. After we are nearly complete with the PFBR, we will take up construction of more FBRs.

Four more FBRs before 2020?

The 20,000-MWe programme provides for four FBRs. Then AHWR (Advanced Heavy Water Reactor). We will take up its construction as soon as the regulatory reviews are over.

The construction of the 300 MWe AHWR will herald the beginning of the third stage of our nuclear power programme, which will use thorium as fuel. Its construction has been delayed by three years. Why is the delay?

Since the AHWR has an innovative design, we wanted to make sure that it is peer-reviewed by a group other than the group that designed it. That has been done. We also wanted a pre-licence regulatory review. The Atomic Energy Regulatory Board is in the process of carrying it out. Once that review is completed, it will be time for us to approach the government for approval for the construction of the project. It may still happen by the end of this year or next year. It is better to do everything in advance than getting into unforeseen situations later. It is better to be sure of the design and safety in advance.

Will it be built at Tarapur?

We have not decided the site yet.

How will the separation of civilian nuclear facilities from their military counterparts affect the organisational structure of the DAE?

The structure remains the same. We are identifying specific plants as civilian and they will be put under safeguards. Laboratories such as BARC [Bhabha Atomic Research Centre] will be obviously on the strategic side. Like that, facility by facility is identified. There is no need for any change in the organisational structure. This is true in all countries. Only one government department looks after the entire atomic energy activity.

Will new legislation be required to effect the separation? Will the Atomic Energy Act be amended?

The first power reactors to be built in India, Tarapur Atomic Power Station-1 and 2, were put under safeguards. Such externally supplied projects, because they came through international cooperation, and when we had inputs from outside, we have put them under facility-specific or supply-specific safeguards. Even today, TAPS-1 and 2, Rajasthan-1 and 2, and Koodankulam - 1 and 2 [which are under construction] are under safeguards. There is no need for legislative change on this count.

What will be the cost of the separation?

It is difficult to quantify exactly. Our programme is not at a standstill. As our programme grows, we have to expand our facilities. New facilities will have to be added. It will be our choice to define tomorrow which of the future facilities will be on the civilian side, and that will be India's sole determination. You are talking about additional costs. If the programme is static and you have to separate, then you will have to build duplicate facilities. If the programme is growing, you can build additional facilities to meet the growth requirements. Whatever capacity we are setting up will be fully utilised at all times. To that extent, additional costs will be contained.... There will be some costs. But I imagine that it will not be excessive, particularly because we are going to implement the separation plan in a phased manner over a period of time.

Why are you retiring Cirus at BARC? It was refurbished only recently. Are you shutting it down because there were allegations that the plutonium for the 1974 Pokhran nuclear explosion came from Cirus, which is not the done thing?

Cirus has all along been a facility to support research for peaceful applications of atomic energy. As per our understanding of the July 18 Joint Statement, it has to be on the civilian side and placed under safeguards. But we cannot do that because it is located at BARC. And BARC is a strategic facility where we cannot allow external inspections. So it is a logical decision to complete the on-going research programme in Cirus and shut it down in 2010.

Is separation the only reason for shutting down Cirus or is there any other reason?

No other reason. It is a logical decision. I must add that it does not mean that R & D will suffer in any way. To meet our programme's requirements, we will build more facilities. The Prime Minister himself has said that there will not be any adverse impact on Research and Development owing to the shutting down of Cirus in 2010.

Will India build more research reactors?

We always have plans to build more research reactors.

What are they?

Sometime ago, we had plans to build a multipurpose research reactor. Similar newer ideas may come on the horizon. We have to think of new facilities. Research reactors are used for a variety of purposes. Production of plutonium (for strategic purposes) is only one aspect. Dhruva is a high-power reactor. We have several other reactors of

smaller power, which support research activities. In that sense, Dhruva is an important system for both research and for plutonium for strategic programmes... .

Which are the other research reactors available?

KAMINI is one. AHWR critical facility at BARC is another. They are essentially to support research.

In case the U.S. is unable to adjust its domestic laws and is unable to give us LWRs or natural uranium, is it possible that some other members of the NSG, such as Russia, France or Canada, give us LWRs or uranium?

Our domestic programme will continue in any case. We look upon these LWRs as additionalities and if they are available, it is good. If they are not available, the domestic programme will continue.

What are the potential sources of supply of enriched uranium or natural uranium for us?

The expectation is that we will be able to access international market, multiple sources wherever they are available on a competitive basis. Wherever it is the cheapest, we will buy. The agreement is about full, civil cooperation. It should proceed on the basis of market principle.

You had said earlier that we would welcome countries giving us natural uranium that could be used as fuel for our indigenous PHWRs. Supposing we get natural uranium for the PHWRs we are building now or we will build in future, will you put those reactors under safeguards?

Yes. I will put it this way. The reactors that we put under safeguards should get fuel from the international market.

Otherwise, you are not prepared to put them under safeguards.

The point is that any reactor put under safeguards should become eligible for full, civil cooperation, which means it also becomes eligible for external fuel supply. In the international market, natural uranium is cheap. If we get that natural uranium, electricity tariff will come down.

So, will we insist that the eight PHWRs that we will put under safeguards under the nuclear separation agreement or future PHWRs that we will put under safeguards should get natural uranium from outside?

Yes. That is the understanding. Once there is a full civil nuclear cooperation, if the Indian uranium is cheaper than the uranium available abroad, it is one picture. But the present situation is the other way. Uranium from abroad is much cheaper than the uranium available in India. Our reactors must benefit from this so that the production cost of electricity is brought down.

What is the sanctity of the dates "between 2006 and 2014" when we will put eight PHWRs under safeguards?

We have to do a lot of preparation. That is why we have said the separation will be done in a phased separation. The time indicates the duration for the phased manner.

Why did we agree to put our reactors under permanent safeguards? Why did we not insist that we should have a right to shift them from the civilian to the military domain?

We are outside the NPT [Nuclear Non-Proliferation Treaty]. Certainly, therefore, safeguard arrangements of India will not be of the type that are applicable to NPT states. We are a country with nuclear weapons and that has been accepted. 'Nuclear weapon states' is NPT terminology.

As far as we are concerned, we have to have our own India-specific safeguards. What has been done now is to ensure that the fuel supply for reactors placed under safeguards will be available for their full operating life.

In that sense, we are talking about permanent fuel supply assurances. As long as fuel supply is permanent, there should be no problem in permanent safeguards.

For TAPS-1 and 2, the U.S. was to supply enriched uranium for 30 years, from 1963 to 1993. But it stopped the supply in 1982-83 because we conducted the nuclear test at Pokhran in 1974.

Let us be clear. The 1974 nuclear explosion was a peaceful experiment. Tarapur agreement was for 30 years. For the remaining part of the 30 years, France stepped in. After that, the agreement itself expired. We have on our own, voluntarily, put the fuel in Tarapur under safeguards. The new arrangement visualises several assurances to ensure that disruptions do not occur. That includes stockpiling for the full life of the reactor. There will also be a provision to take corrective measures if at all disruption takes place. It is a good practical arrangement.

The nuclear separation agreement talks about India-specific safeguards. What are they?

Our safeguards agreement cannot be like that of any NPT country. They are India-specific arrangements, recognising the fact that India has a nuclear weapon programme.

How did the earlier technology denial regimes affect us for 30 years and what difference will the nuclear separation agreement make for us now?

Our programme is self-reliant and it will continue to be so. This change we visualise is about civil nuclear cooperation. Hopefully, it will bring additionalities in terms of greater electricity-generating capacity in the near term.

The National Democratic Alliance government was interested in amending the Atomic Energy Act to allow for private sector participation in building nuclear power plants but the present government seems to have a rethink on it. Ratan Tata is keen on the Tatas' participation in building nuclear power projects.

The Atomic Energy Act, as it exists, says that nuclear power activity can be done by a government company. Under the Act, a government company means one in which 51 per cent of the shares are with the Central government. In principle, 49 per cent of the

equity can come from private or State government resources. That provision does exist. We will also explore the possibility of further amendments to the Atomic Energy Act.

Although the Act allows for private equity of 49 per cent, you have blocked the private sector until now.

Nobody has blocked it.

Ratan Tata has shown interest. Will you welcome private participation?

Yes. But it has to be a specific proposal and should lead to a larger capacity addition over and above what can be done with the present arrangements. If there are proposals that can add to the capacity, they are welcome.

What are the strategic facilities that will not be put under safeguards? Do they include the Rare Materials Plant near Mysore and the Nuclear Fuel Complex in Hyderabad?

Anything that is not identified as civilian is military. So they will be kept out of safeguards.

What is the basis for selecting MAPS-1 and 2 reactors and Tarapur-3 and 4 reactors for exclusion from safeguards?

We need a certain minimum capacity for our strategic programme. So they will not come under safeguards. The rest of them, which have no strategic connotation, will be put under safeguards.

Why did we choose to put the heavy water plants at Tuticorin, Thal and Hazira under safeguards when it is not necessary to do so?

Civilian heavy water reactors can be fed from civilian heavy water plants. Strategic heavy water reactors can be fed by strategic heavy water reactors.

Why have we done this on our own?

We have identified the civilian domain that will be fully eligible for full civilian nuclear international cooperation. Heavy water plants should also be eligible for international cooperation if they are in the civilian domain.

What is the probability of the U.S. Congress rejecting the nuclear separation agreement?

I do not know.

Is the separation agreement a backdoor entry by India into the NPT?

India doesn't subscribe to the NPT. That is our principled position.

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