

Indo-US Nuclear Agreement and IAEA Safeguards

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Abstract

Nuclear transfers to a non-nuclear weapon state (NNWS) are conditioned on IAEA safeguards on all current and future peaceful nuclear activities, what are called the full-scope safeguards (FSS) or comprehensive safeguards. Since India is a NNWS according to the NPT definition, the NSG Guidelines as currently implemented would, therefore, invoke FSS if India seeks nuclear technology or nuclear power plants – even on a turnkey basis – or nuclear fuel from any NSG member-country. The condition for any progress on the deal is the separation of civilian and military nuclear facilities that India has committed to and the sequencing of the reciprocal steps envisaged in the agreement. This seems quite feasible if the Indian policy-makers are clear about India's need of fissile material in quantitative terms. A properly negotiated INFCIRC/66 type safeguards agreement and Additional Protocol with the IAEA is also possible without compromising on India's strategic programmes and national security. Finally, IAEA is likely to treat India as a nuclear weapon state and apply safeguards selectively so as not to unduly burden its scarce funds and skilled human resource.

A key component of the Indo-US nuclear agreement of July 18, 2005 is the following set of commitments by India: (a) identification and separation of civilian and military nuclear facilities and programmes *in a phased manner*; (b) filing a declaration of its civilian facilities to the International Atomic Energy Agency (IAEA) and placing *voluntarily* its civilian nuclear facilities under IAEA safeguards; and, (c) signing and adhering to an 'Additional Protocol' (AP) for the civilian nuclear facilities. (Emphasis added).

For the Indian department of atomic energy (DAE), however, meeting these seems to be a difficult proposition. In fact, the issue is becoming

somewhat controversial, arising chiefly from the manner in which the above part of the deal is being interpreted by the two parties. The root cause can be traced to the statement preceding the above commitment in the text of agreement, which reads: “India would...assume the *same* responsibilities and practices and acquire the *same* benefits and advantages as other leading *countries with advanced nuclear technology*, such as the US” (Emphasis added)

There is a curious phrase here: ‘countries with advanced nuclear technology’. Indeed, in the joint statement, the US President George Bush described India as such a State. But what are the characteristics of such a State? Which are the other such States? And what are the benefits and advantages of such States? These have been left unsaid because the phrase itself is undefined. If the phrase has been used in the same sense as it occurs in the IAEA Statute regarding the constitution of its Board of Governors (Article VI) – “members most advanced in the technology of atomic energy including the production of source materials” – then it implies capability in the entire nuclear fuel cycle.

However, in the part of the agreement that sets out the Indian commitments, the qualification “such as the US” has been used with the phrase. Besides its full fuel-cycle capability, what characterizes US as a “country with advanced nuclear technology” is its weapons capability, and its status under the nuclear Non-Proliferation Treaty (NPT) as a nuclear weapons state (NWS). So in India’s interpretation, it expects to be treated like an NWS with regard to assuming responsibilities and obligations under international non-proliferation regimes, namely, IAEA nuclear safeguards, and the Guidelines of the 45-member Nuclear Suppliers Group (NSG) for nuclear trade¹.

In fact, soon after the agreement, the Indian Foreign Secretary, Shyam Saran was quoted in the media as: “India will accept conditions that are *no less and no more* than those accepted by nuclear weapon states”. (Emphasis added). Since, by the accepted definition of an NWS under the NPT, India cannot be granted that status *de jure*, in the government’s view, the Indo-US Agreement amounted to India being recognized as a *de facto* nuclear weapon state for all purposes.

But such an expectation – notwithstanding the injudiciously drafted joint statement – may be unrealistic. For instance, India is unlikely to be

treated as an NWS as regards nuclear exports. The NSG Guidelines, which form an integral component of the current non-proliferation regime that is built on the tenets of the NPT, allow nuclear transfers, the 'Trigger List' items, to a NWS without licence.

But nuclear transfers to a non-nuclear weapon state (NNWS) are conditioned on IAEA safeguards on all current and future *peaceful* nuclear activities, what are called the full-scope safeguards (FSS) or comprehensive safeguards. Since India is a NNWS according to the NPT definition, the NSG Guidelines as currently implemented would, therefore, invoke FSS if India seeks nuclear technology or nuclear power plants – even on a turn-key basis – or nuclear fuel from any NSG member-country. India cannot expect licence-free exports when the very aim of the Indo-US nuclear agreement is to first find ways of doing nuclear trade without imposing FSS on India's activities; licence-free exports may be a far cry.

The reciprocal US commitment is that "the US President would seek agreement from Congress to adjust US laws and policies ... [and] the US will work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India". The condition that is critical for any progress on the deal is the separation of civilian and military nuclear facilities that India has committed to and the sequencing of the reciprocal steps envisaged in the agreement. This is very clear from the statements at the Congressional hearings on the Indo-US nuclear agreement.²

But the Ministry of External Affairs (MEA) and the DAE do not seem to be on the same wavelength on the civil-military separation issue. Anil Kakodkar, the Chairman of the Atomic Energy Commission (AEC), has made a public statement³ that the Prototype Fast Breeder Reactor (PFBR) and the Indira Gandhi Centre for Atomic Research (IGCAR) at Kalpakkam, an R&D Centre, will not be put under safeguards. He also said that the cost and any implication on our strategic programme would be factors in deciding what will be designated as civilian. "It makes no sense for India to deliberately keep some of its civilian facilities out of its declaration for safeguards purposes, if it is really interested in obtaining international cooperation on as wide a scale as possible," the Foreign Secretary Saran said in an address at a public forum⁴ with an obvious reference to Kakodkar's statement.

Elsewhere, Kakodkar also stated that the task of separation was not going to be easy, though he did not elaborate. On the face of it, however, for outside observers, a civil-military separation would seem eminently feasible. From a strategic point of view, since the research reactors Dhruva and cirus are the chief sources of weapons-grade plutonium (WGP), and it makes no sense to use reactor-grade plutonium (RGP) for weapons, one should be able to demarcate all the power plants as civilian. It is obvious that one-way traffic of nuclear material from military to civilian facilities does not pose any problem; and so a military facility can always be used for civilian purposes. It is only when there is a two-way traffic, as in a reprocessing plant, there would be a problem. The way safeguards are currently being implemented at the reprocessing plant PREFRE at Tarapur⁵ may not be acceptable under the Indo-US agreement. A dedicated facility for each objective – military and civil – would then become necessary because of safeguards on the material that comes in and goes out.

So there would be costs involved, both capital and operational (because the military facility could be idle for most of the time), in setting up new reprocessing units. There could be other costs involved in duplicating personnel required in these additional units as well as in other operations where people and equipment double up for the twin objectives at present. All this needs to be given a hard quantitative look. To have clarity on the possible approach to the civil-military delineation, that does not compromise on India's strategic requirements, a proper understanding of IAEA's safeguards regime, and the nature of safeguards that will be implemented on the declared civilian facilities, is first necessary.

The IAEA Nuclear Safeguards

Implementing nuclear safeguards by the IAEA – which, as will be presently described, are of different kinds – arise from the authority that flows from its Statute (Article III A.5), which states: “To establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities, and information made available by the Agency, or at its request or under its supervision or control, are not used in such a way as to further any military purpose; and to apply safeguards, at the request of the parties to any bilateral or multilateral arrangement, or at the request of a State, to any of that State's activities in the field of atomic energy.”

Safeguards are applied pursuant to: (a) Comprehensive Safeguards Agreements (CSAs), also known as FSS, a regime based on the IAEA document INFCIRC/153 (corrected) that applies safeguards on all nuclear material in all nuclear activities of a State following NNWSs' obligations under the NPT's Article III. 1 (or other multilateral non-proliferation treaties which embody similar non-proliferation commitment)⁶; (b) INFCIRC/66-type agreements, which are item specific or 'islanded' safeguards arrangement⁷; (c) Voluntary Offer Agreements (VOAs) concluded with NWSs⁸; and, (d) Additional Protocols (APs)⁹, based on the Model Protocol (INFCIRC/540 (corrected)).

INFCIRC/66-type agreements can be of three kinds: (i) An agreement concluded pursuant to a project and supply agreement between the IAEA and a State that does not have a CSA in place; (ii) An agreement between the IAEA and one or more States, providing for the application of safeguards to nuclear material, services, equipment or facilities supplied under a co-operation arrangement between States, or, having been subject to such safeguards, re-transferred to States without CSAs; and, (iii) A unilateral submission agreement between the IAEA and a State, concluded at the request of that State, for the application of safeguards to some of the State's activities.

In the Indian context, only kinds (ii) and (iii) of INFCIRC/66-type safeguards agreements are in force: kind (ii) for the Rajasthan Atomic Power Station (RAPS) arising from the pursuit and perpetuity provisions of safeguards on the heavy water supplied by the Soviet Union (INFCIRC/260; Nov. 17, 1977) and kind (iii) for (a) the supply of Koodankulam power station from the Soviet Union (INFCIRC/360; Sep. 27, 1988)¹⁰, and (b) for all nuclear material at the Tarapur Atomic Power Station (TAPS) – INFCIRC/433 and 433/Mod.1; March 1 and September 12, 1994, respectively¹¹ – following the unilateral submission for application of safeguards by India after the termination of the 30-year Indo-US Bilateral Agreement of 1963 (INFCIRC/154/Pt. I). No other Indian nuclear facility and associated nuclear material is under safeguards.

The objectives of the different safeguards arrangements are as follows:

- CSA or INFCIRC/153: Verification of a State's compliance with its undertaking to accept safeguards on all nuclear material in all its

peaceful nuclear activities...and “timely detection of diversion of significant quantities¹² of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection”

- INFCIRC/66-type: To ensure that the nuclear material, non-nuclear material, services, equipment, facilities and information specified and placed under safeguards are not used for the manufacture of nuclear weapons or any other nuclear explosive devices or to further any military purpose.
- VOA: To enable the Agency to verify that such material is not withdrawn, *except as provided for in this Agreement*¹³, from activities in facilities while such material is being safeguarded under this Agreement. (Emphasis added)
- Additional Protocol: To enable detection of undeclared nuclear material and activities and to address fully the verification of a State’s compliance with its undertaking through measures additional to the existing safeguards agreement. It is designed to enable the IAEA get a qualitative picture of a State’s activities, over and above the quantitative verification of material accounting and the prevention of diversion under a standard regime of safeguards.

The VOA safeguards on an NWS, which is not obliged under the NPT to put in place any safeguards arrangement at all, is thus more symbolic. Accordingly, from the offered list of facilities/material, the IAEA selects only some of the facilities and material for the application of safeguards unlike in an NNWS where the Agency is obliged to inspect all facilities where nuclear material is used. Under its VOA, the US, for example, provided a list of 245 commercial and government facilities for IAEA safeguards. All sites under the jurisdiction of the department of defence (DOD) were exempted from IAEA inspections under National Security Exclusion (NSE) policy.

Since 1981, the IAEA has implemented safeguards on 19 US facilities and never at more than five facilities in a year: six fuel-fabrication plants, six civil nuclear reactors, six department of energy (DOE) facilities and one gas centrifuge uranium enrichment plant. Due to increasing budgetary pressures, the IAEA discontinued inspections in the US in 1992. Since

1994, the IAEA has resumed inspections at the request of the US, but only at four facilities that hold or process nuclear materials in excess of defence needs – the Y-12 National Security Complex, Oak Ridge, Tennessee; the Savannah River Site, South Carolina; the Hanford Site, Richland, Washington State; and the BWX Technologies Facility, Lynchburg, Virginia – on a monthly basis. It is pertinent to keep in mind that the IAEA undertook this effort on the condition that the US reimburses the costs incurred by it on inspections.¹⁴

When the US decided to have safeguards on its civilian facilities under a VOA, it was done with the understanding with the Congress that the President shall notify the Congressional committees on foreign affairs any proposed addition to the list together with an explanation of the basis for the addition and a clarification that the addition will not adversely affect national security within 60 days prior to intimating the IAEA.¹⁵ Similar notification is required for deletion as well. A joint resolution of the Congress could overturn the decision. In India, however, we have no instituted laws and parliamentary procedures and the rationale for such important decisions are never known beyond a few top officials.

India's Options

A current critical need for the Indian nuclear programme is fuel – low enriched uranium (LEU) for twin light water reactors (LWRs) at TAPS and natural uranium or yellow cake for the other 13 Pressurized Heavy Water Reactors (PHWRs). Access to nuclear technology or power plants is not what India needs, though if India gets them as well in the bargain, they will marginally add to the nuclear power generation from the indigenous programme. And, because of NSG guidelines, import of fuel (whose main suppliers are NSG members) can take place only under FSS or CSA.

If the US administration succeeds in 'adjusting' both domestic laws and NSG guidelines, the FSS/CSA requirement for India could be waived. US officials have also stated very clearly in Congressional hearings that modifications would be India-specific. The agreement could then lead to a unique opportunity for India. Implementing the Indian part of the commitment, therefore, becomes imperative if India desires that opportunity.

Now under a VOA by NWSs on their civilian nuclear installations is not only voluntary but also flexible in the sense that any material or facility declared under safeguards can at any time be withdrawn from safeguards at the will of the State on grounds of national security. India expects to be treated in exactly the same fashion. While the Joint Statement has explicitly allowed for “voluntarily placing its civilian nuclear facilities under safeguards”, it does not explicitly permit the flexibility in the above sense.

The following statement reflects the Indian official interpretation.¹⁶ “The identification and separation of Indian facilities would be done by the Government of India. National security considerations would dictate this... IAEA safeguards shall apply to facilities to be designated by India voluntarily. India will also negotiate an Additional Protocol with IAEA applicable to the designated civilian facilities. In this respect there will be no discrimination between India and other NWSs. ..Nuclear weapon states, including the US, have the right to shift facilities from civilian category to military and there is no reason why this should not apply to India.” Kakodkar has reiterated this more specifically¹⁷: “Whatever we determine as civilian, we will put under the IAEA safeguards. That will be done in a voluntary manner. Nuclear weapon states do place their civilian facilities under the Voluntary Safeguards Agreement of the IAEA. We will do the same.”

This interpretation is, however, at variance with the US official interpretation. Here again, it is the unfortunate manner of use of the phrase “voluntarily”. While India seems to be interpreting it to mean the IAEA Voluntary Offer Arrangement safeguards regime, for US it carries nothing more than its dictionary meaning (“unilaterally”) as is evident from Mr Joseph’s at the Congressional Hearings.¹⁸

Joseph said: “[The US] would not view a voluntary offer arrangement as defensible from a non-proliferation standpoint, or consistent with the Joint Statement [of July 18].” It is indeed quite foolhardy for the Indian government to expect that its view will be conceded. In fact, Mr Joseph also indicated that he (and Mr Burns) had conveyed it to New Delhi that safeguards must be applied *in perpetuity*. Non-proliferation experts like David Albright¹⁹ of the ISIS too have stressed that INFCIRC/66-type safeguards should be in force *in perpetuity* on every declared civilian facility.

Now what indeed are the crucial differences between VOA and INFCIRC/66-type safeguards?

Under a VOA, as mentioned earlier, a State offers some or all of the nuclear material and/or facilities in its nuclear fuel cycle for the application of safeguards out of which the IAEA selects a certain number based on logistics and other internal administrative reasons including resource availability. When an AP is negotiated by an NWS, that too will be similarly applied. The reason being that as an NWS, it is accepted that it would have undeclared facilities and material and weapons-related programmes. The safeguards objective itself is limited in this case. There are no issues of diversion from declared facilities as well since, in any case, an NWS can remove a facility from safeguards for national security reasons and withdraw safeguarded material to unsafeguarded activities on giving notice to the IAEA. Further, the safeguards agreement itself can be terminated at any time giving an agreed period of notice.

Under INFCIRC/66-type agreement/s that would be implemented on the facilities that India declares as civilian and “voluntarily” offers for safeguards – which too will be negotiated – it/they would be akin to the safeguards in force for TAPS since India’s unilateral offer in 1994. India cannot negotiate a provision for removing a facility from safeguards – that is, moving from civilian to military category – under a national security clause. Similarly, given the stated objective of the INFCIRC/66-type regime, withdrawal of safeguarded material to an unsafeguarded or military facility will not be permitted even after a notice period for national security reasons.

A termination period for the agreement should however be negotiated for all indigenous facilities at least. For imported power plants, in any case, the supplier will most likely insist that safeguards be applied in perpetuity, like it is for RAPS and the Koodankulam project. A termination clause for indigenous power plants should be negotiated for contingency reasons in the form of a *force majeure* clause. Such situations can arise if, say, the conditions under which an Indo-US cooperation agreement is concluded change because of domestic policy changes (recall India’s experience with TAPS fuel supply arrangement with the US) or the amendments in NSG Guidelines are revoked at a subsequent date.

As regards the IAEA policy of selection of only a certain number of facilities for the application of safeguards, IAEA may or may not apply

safeguards on all the declared facilities because, after all, the very separation implies that there are undeclared facilities and nuclear material. From that perspective, even if IAEA does apply safeguards on all, the intensity of safeguards, in terms of frequency of inspections, may be kept small given the resource crunch. Indeed, given the large number of Indian facilities that may suddenly come under safeguards pursuant to the Indo-US deal, the budgetary pressures on IAEA will be substantial.²⁰

But India is in a unique status. Being a non-signatory to the NPT, it is a nuclear weapon state and yet a 'non-nuclear weapon state'. So, one cannot expect the same advantages as NPT-sanctioned NWSs. Negotiated INFCIRC/66-type safeguards on the declared facilities is perhaps the least India may have to do if it wants the doors of international nuclear trade to open for its benefit. India has to give up something in return for what has been denied to it for four decades and not insist on complete parity with NWSs with regard to the safeguards regime that will be applied. The Indian official position seems to be driven more by the desire to secure a *de facto* status of a nuclear weapon state than by the genuine need of gaining access to nuclear goods and technology.

Therefore, our strategic and national security needs, in particular the size of the nuclear deterrent, have to be specified and an assessment made of how these would be met under a regime of INFCIRC/66-type safeguards on a given number of facilities. Only after that a 'list' of civilian facilities or even a roadmap of how the government would go about the separation exercise can be presented. Unfortunately, the size of the nuclear deterrent required has never been properly articulated or evaluated by the defence establishment and the nuclear strategists. The vagueness that is evident in the ongoing discussions on the demarcation of military and civil facilities is a reflection of the woolly thinking on this aspect.

The Size of Deterrence

A rough estimate of plutonium derived till now from the research reactors – 40 MWt Cirus and 100 MWt Dhruva at the rate of about 16-20 kg per year – alone would be about 0.5 tonne²¹, enough for 50-60 Pokhran type weapons. These will continue to yield WGP for about three weapons per year. The question is whether these suffice for a minimum deterrent or not. If not, whether there is a case for using reactor-grade plutonium

(RGP) from the unsafeguarded 220 MWe PHWRs. (According to some analysts Pakistan's annual uranium enrichment centrifuge capacity is more and this could become a factor in the assessment.) An estimate of the accumulated RGP from about 120 reactor-years of PHWRs yields about 8-10 tonnes. Now for the fast breeder programme, the first loading of the upcoming 500 MWe Prototype Fast Breeder Reactor (PFBR) is about 3-4 tonne and it is essential to keep an equal amount in the pipeline for another loading. So even if our strategists wanted to supplement the existing stockpile with RGP, there would not be much available for that purpose.

In fact, if one declared the PFBR as civilian, the required fuel (mixed oxide of plutonium and depleted uranium) for it could possibly be imported and release the earmarked RGP for strategic use. So it is not clear why Kakodkar stated that PFBR will not be put under safeguards. His argument that it is in the R&D mode is not convincing because it is designed to produce commercial power and a corporation BHAVINI has been set up specifically to manage its power generation. Also, any R&D that may need to be carried out – such as change of fuel type from oxide to nitride or metal – can be carried out in the Fast Breeder Test Reactor (FBTR) at IGCAR, a major R&D centre for nuclear projects including the nuclear submarine or the Advanced Technology Vehicle (ATV), which need not be placed under safeguards.

However, if the WGP from *Cirus* and *Dhruva* has to be supplemented for the envisaged deterrent size, it is baseless and unnecessary to think of the breeder as the option, as Selig Harrison – an India hand but not a nuclear expert by any reckoning – has suggested,²² unless, of course, you desire uranium-233 weapons, a route which no NWS has followed so far. Either an additional *Dhruva*-like research reactor can be built or one power station (like the Madras Atomic Power Station, MAPS, at Kalpakkam) can be designated as military, which could produce the requisite WGP through low burn-ups. Of course, the latter route would mean an inefficient operation for power generation but that would perhaps be a cheaper option than the former of building a new research reactor.

There have been arguments that production of tritium will be affected if power reactors were placed under safeguards. Tritium is a radioactive isotope of hydrogen (higher than deuterium that makes heavy water) with a half-life of about 12 years and is an essential ingredient of thermonuclear weapons or H-bombs and boosted fission weapons. In nature it is present

in extremely minute proportions but can be produced in nuclear power reactors in two ways. In heavy water reactors, nuclei of the moderator heavy water absorb neutrons and get converted into tritium. This built-up tritium is a contaminant and is recovered by purification or detritiation of heavy water. Another way is to introduce rods of lithium-6 alloy in nuclear reactor cores. These absorb neutrons to produce helium-4 and tritium.

It is a gross misconception that tritium is a material that comes under safeguards. Neither heavy water nor tritium is defined as a nuclear material under the IAEA's safeguards regimes. This is because fissile material is essential for all nuclear weapons. So safeguarding, and controlling access to, fissile nuclear material suffices to prevent proliferation. A supplier of, say, heavy water, may, however, decide to place the material (as a specified non-nuclear material in the agreement), and the products derived therefrom, under safeguards, like it has been with the heavy water supplied by the Soviet Union for RAPS. So, if tritium is needed for strategic purposes it can, of course, be produced by both methods in heavy water moderated research reactors. If these quantities would not suffice, the detritiation of heavy water or bombarding of lithium can be used to legitimately produce tritium even in reactors under unilateral safeguards. The simplest solution, of course, would be to set aside one power plant as military and use it to produce tritium and plutonium (for weapons) even as it generates power, albeit inefficiently. The Hanford plutonium producing facility is an example of a US military facility that also supplied power to the grid as a commercial utility.

Civil-Military Separation: A Possible Scenario

So, a possible approach to separation would be to declare all power reactors (including PFBR and future ones), except perhaps one (for which MAPS at Kalpakkam would be ideally suited because of its proximity to IGCAR, ATV project and the reprocessing plant KARP), the reprocessing plants PREFRE at Tarapur and the upcoming breeder fuel reprocessing plant as civilian. Research centres BARC and IGCAR and the associated reprocessing plants, one power station (perhaps MAPS) and the centrifuge plant at the Rare Materials Project (RMP) at Mysore can be termed military. The divisions of Nuclear Fuel Complex (NFC) at Hyderabad that handle fuel fabrication for the safeguarded power reactors can come under safeguards in a campaign mode.

India has also committed itself to signing and adhering to a negotiated AP. What would that entail? Within 180 days of entry into force of an AP, a State party must provide to the Agency a declaration containing information about its nuclear and nuclear-related activities. This includes expanded information about its holdings of uranium and thorium ores and ore concentrates and of other plutonium and uranium materials not currently subject to Agency's safeguards, general information about its nuclear fuel-related R&D activities not involving nuclear material and its import and export of nuclear material and equipment.

The Additional Protocol

The provisions of Model Additional Protocol (INFCIRC/540) for complementary access (to sites and facilities related to nuclear facilities), short-notice inspections (24 hours to new sites and 2 hours to sites within a complex), environmental sampling techniques and access to other sources of information, are all aimed at enabling the Agency give a credible assurance against (clandestine) proliferation by an NNWS.

For NWSs with VOAs and non-NPT signatories with INFCIRC/66 type safeguards, the Additional Protocols are individually negotiated (endnote 10). Since, it is accepted that there would be undeclared facilities in these cases, the AP would be of limited value in these cases and the intensity of application by the agency would be that much reduced. To understand how best this can be negotiated, it is instructive to discuss the APs of the NWSs, the US in particular. It should be pointed out that the US AP is not yet in force though the US had signed it in June 1998. The President forwarded it to the Senate for advice in May 2002 and the process of Congressional approval and ratification is not yet over.

Because the US is an accepted NWS under the NPT, the US AP includes two national security-related provisions not contained in the Model Protocol (INFCIRC/540). Unlike the other NWSs, the US AP is identical to the Model Protocol except for these provisions. Article 1b of the US AP provides for what is known as the National Security Exclusion (NSE), which is intended to exclude the application of the Additional Protocol where the US decides that its application would result in the IAEA's access to "activities with direct national security significance to the US, or to locations or information associated with such activities." The (national security-related)

the Managed Access provision (Article 1c) permits the US to manage access by the IAEA to “activities with direct national security significance to the US, or to locations or information associated with such activities.”

Actually, a general Managed Access provision (Article 7) is available to all countries as part of the Model Protocol. In the case of the US, 1c supplements 7, and in the words of the US officials, “more robust than 7”²³. Article 7 gives the right to the States to “prevent the dissemination of proliferation sensitive information, to meet safety or physical protection requirements, or to protect proprietary or commercially sensitive information.” The kind of measures that US is likely to implement as part of Article 1 were listed in the Subsidiary Arrangement with the IAEA which will enter into force when the AP enters into force. Such a Subsidiary Arrangement too is available to all countries as part of INFCIRC/1540 but not related to NSE kind of measures.

Linton F. Brooks, Administrator, US National Security Administration, in his testimony at the hearings²⁴ said: “The US can unilaterally and without explanation unvoke NSE...The IAEA has no right to challenge or question the US invocation of NSE.” In fact, in a letter sent to Mohamed El Baradei, Director-General of the IAEA in April 2002, Ambassador Kenneth C. Brill, the US Permanent Representative to the IAEA, said: “The US will make full and repeated use of the [two supplementary provisions to the AP] in order to protect information, locations and activities of direct national security significance to the US. Decisions regarding the use of these provisions are a unilateral prerogative of the US – not subject to interpretation by, or justification to, any other party.” Brill also added: “Certain activities that occur *at locations that are part of US civil nuclear programme* may also be excluded from the declaration and the access provisions of the AP in accordance with the terms of the NSE.”²⁵ (Emphasis added)

Unlike the US AP, which is basically the entire text of INFCIRC/1540 plus two NSE provisions, those of the other NWSs have not incorporated many provisions from the Model Protocol. For instance, both China and Russia have sharply limited the scope of their declarations that they are required to make and have eliminated all associated IAEA complimentary access. Under the AP, Russia and China have agreed to provide information to the IAEA only on nuclear exports and imports to and from NNWSs,

nuclear material located on the territory of other States and international cooperation with NNWS in the field of nuclear fuel cycle which has nuclear non-proliferation significance. For good measure, Russia has NSE-type provision as well.

France and UK do not have NSE specifically included but their APs have focussed narrowly on areas in which its implementation could assist the IAEA in detecting undeclared nuclear activities in NNWSs. The two have also put some limits on the categories of locations subject to declaration and access. Broadly, the two have all the provisions of the Model Protocol but limited their applicability only to activities that have bearing on safeguards in NNWSs.

The question is in what form India would want to negotiate its AP. It is not clear whether, pursuant to the Indo-US agreement, any NSE provision that India might wish to incorporate would be acceptable. It is up to how well India is able to negotiate with the IAEA. In the final analysis, however, since India would have undeclared nuclear weapons programme, and since the AP is meant to uncover undeclared programmes, it would have limited utility in the Indian context, just as it is in the NWSs. So India should, one would imagine, be able to negotiate a reasonably acceptable AP.

Also, since the objective is to gain a qualitative assessment of the overall programme in a State, the fundamental principle by which IAEA implements the AP in a State is not to “mechanistically and systematically seek to verify the information provided”. An extensive nuclear programme like that of Japan or Canada has taken 2-5 years to arrive at a comprehensive picture. In fact, the total number of complimentary access inspections that IAEA has conducted till 2003 is only 86. So, one would expect that declared sites and information would be inspected only on “a selective basis”.

An estimate in the US has put the number of sites offered for safeguards after the AP would be 1775 (of which 1000 are abandoned uranium mines).²⁶ As an administration official testified, “The IAEA is not expected to waste scarce resources...in an NWS such as the US.” India too has an extensive nuclear programme and bringing bulk of the civilian programme under safeguards plus the AP would mean a large number of sites would be on offer to the IAEA. But most of them, in all likelihood, would not be selected for applying provisions of the AP by the IAEA. What would be of

interest internationally from a non-proliferation perspective is the declaration of nuclear exports from India, as an advanced nuclear technology country. As of now there exists no source for this information in the public domain in India.

More importantly, IAEA is facing serious challenges in the implementation of strengthened safeguards.²⁷ After years of a zero growth budget, IAEA has got some increase in the overall budget, spread over 2004-2007. The assessed contributions of individual States are such that the US meets nearly 26 per cent of the IAEA budget; for the safeguards component, the US component works out to be 35-40 per cent. The safeguards programme has been facing a real financial crunch with mounting nuclear inspection operations in various parts of the world besides the Agency's implementation of agreements. So has been the other major programme of technical cooperation, which is of main interest to the developing world. The difficult act of balancing the two important components has been possible chiefly because of voluntary contributions.

Even though there is a small budgetary increase, the IAEA expects that individual States would contribute to meeting the expenses towards implementing the respective APs. In India's case, it would be a major jump – the standard safeguards plus the AP on India's declared civilian facilities. If India has to meet part of this expenditure at least by increasing its contribution to the IAEA, this is also a factor that needs to be taken into account. Also, the IAEA is facing a looming human capital crisis as a large number of inspectors and safeguards personnel are expected to retire in the next five years and skill has been hard to come by for the Agency. This would be another factor when IAEA takes up new safeguards agreements.

The upshot of all the above is that, one, separation seems to be a feasible proposition but the country's strategic needs have to be clear in quantitative terms. Two, properly negotiated INFCIRC/66-type safeguards agreements and the AP can be arrived at without compromising on strategic programmes and national security. Three, though technically not an NWS and a Voluntary Offer Agreement may not be acceptable, India is more likely to be treated by the IAEA like an NWS because of the accepted fact of India's weapons programme and undeclared military facilities. So, IAEA is likely to apply safeguards selectively so as not to unduly burden its scarce funds and skilled human resource.

References/End Notes

- ¹ The Guidelines currently consist of two parts: Part 1 (INFCIRC/254/Pt.I) contains guidelines for nuclear transfers and incorporates a 'trigger list' that includes source material (including processed ore or yellow cake) and special fissionable material, and nuclear reactors and designated types of nuclear plant (e.g. reprocessing plants), equipment especially designed or prepared for such plants and related technology. These guidelines require that the importing State have a comprehensive safeguards agreement (CSA) in force with the IAEA.

Part 2 (INFCIRC/254/Pt. II) contains guidelines for transfers of nuclear related dual use equipment, materials, software and related technology. The member States should not authorize transfers of the dual use items "for use in a non-nuclear-weapon State in a nuclear explosive activity or an unsafeguarded fuel cycle activity, or...in general when there is an unacceptable risk of diversion to such an activity...". The guidelines also stipulate that suppliers, in considering transfers of dual use items, should take into account, *inter alia*, whether the recipient State has a CSA in place.
- ² Hearings of the Senate Foreign Relations Committee on US-India Nuclear Cooperation Initiative, November 2, 2005.
- ³ Interview by T. S. Subramanian, *The Hindu*, August 12, 2005.
- ⁴ "Nuclear Non-Proliferation and International Security", Lecture by Foreign Secretary Shyam Saran at India Habitat Centre, New Delhi, October 24, 2005
- ⁵ As per the pursuit provisions of RAPS safeguards, reprocessing plants too come under safeguards during the reprocessing campaign of the RAPS spent fuel for the period of the campaign.
- ⁶ "on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, under its jurisdiction, or carried out under its control anywhere..." The scope of a CSA is not limited to nuclear material actually declared by a State, but includes any nuclear material that should have been declared to the IAEA. There may be non-peaceful uses of nuclear material, which would not be proscribed under the NPT and to which safeguards would not apply during the period of such use (e.g. nuclear propulsion of submarines or other warships).
- ⁷ The INFCIRC/66-type agreement specifies the nuclear material, non-nuclear material (e.g. heavy water, zirconium tubes), facilities and/or equipment to be safeguarded, and prohibits the use of the specified items in such a way as to further any military purpose. Since 1975, such agreements also explicitly proscribe any use related to the manufacture of any other nuclear explosive device.
- ⁸ An NWS, under the NPT, is not required to accept safeguards but has voluntarily offered to do so, *inter alia*, to allay concerns that the application of IAEA safeguards could lead to commercial disadvantages for the nuclear industries of NNWSs.

Under a VOA, a State offers, for selection by the IAEA for the application of safeguards, some or all of the nuclear material and/or facilities in its nuclear fuel cycle. A VOA generally follows the format of INFCIRC/153, but the scope is not comprehensive. The IAEA has concluded such a VOA with each of the five NWSs (i.e., China, France, Russia, the UK and the USA.)

- ⁹ A protocol additional to a safeguards agreement (or agreements) concluded between the IAEA and a State, or group of States, following the provisions of INFCIRC/540 (corrected). Originally called 'Programme 93+2', it provides for those measures for strengthening the effectiveness and improving the efficiency of IAEA safeguards which could not be implemented under the legal authority of safeguards agreements and was introduced in 1997. It mainly addresses a State's compliance with its undertaking under a CSA by enabling detection of undeclared nuclear material and activities in the State. A CSA, together with an additional protocol, contains all of the measures included in INFCIRC/540. In the case of an INFCIRC/66-type safeguards agreement or of VOA, an Additional Protocol includes only those measures that have been agreed to by the State.
- ¹⁰ The bilateral agreement was renegotiated as an Indo-Russian agreement in 1992 but the deal was "grandfathered" by the 1988 INFCIRC/66-type safeguards. It was in 1992 that NSG amended its guidelines to require CSA for all nuclear transfers. Russia is a member of the NSG.
- ¹¹ Safeguards on low enriched uranium (LEU) for TAPS from China in 1995 and Russia in 2001 are covered by the provisions of INFCIRC/433/Mod. 1. China was then not a member of NSG. Russia, though an NSG member, supplied fuel as a one-time arrangement under the safety clause of NSG Guidelines when the CSA requirement was waived. This supply is likely to be fully consumed by mid-2006.
- ¹² Significant Quantity (SQ): the approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded.
- ¹³ A VOA provides for withdrawal of facilities from the original list of safeguarded facilities (on grounds of national security) as well withdrawal of material from a safeguarded facility to an unsafeguarded facility after giving notice to the Agency.
- ¹⁴ Report of the hearings of the Senate Committee on Foreign Relations on the US Additional Protocol, March 2004.
- ¹⁵ *Ibid.*
- ¹⁶ See 'Backgrounder on India-US Civil Nuclear Energy Cooperation', PMO Press Release, July 29, 2005.
- ¹⁷ Interview by T. S. Subramanian, *The Hindu*, August 12, 2005.
- ¹⁸ no.2.
- ¹⁹ *Ibid.*

- ²⁰ US Government Accountability Office Report GAO-06-93 on IAEA Safeguards, October 2005.
- ²¹ R. Ramachandran, "Pokhran-II: The Technical Dimensions", in Amitabh Mattoo (Ed.), *Pokhran and Beyond*, Har Anand Publications, New Delhi, 1998.
- ²² Siddharth Varadarajan, "Keep Fast Breeder Reactor Out of IAEA Inspections: US Expert," *The Hindu*, December 17, 2005.
- ²³ no.14
- ²⁴ Ibid.
- ²⁵ Ibid.
- ²⁶ Ibid.
- ²⁷ Ibid.

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