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**Stability of the Prospective US-India Civil Nuclear Cooperation**

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**I. Introduction**

At this time a number of steps have been taken toward implementing the US-India cooperation in civil nuclear energy that was envisioned in the historic July 18, 2005 joint memorandum issued by President Bush and Prime Minister Singh.<sup>1</sup> These are briefly enumerated in the following Section II, along with the several steps remaining in order to achieve realization of the proposed cooperation. At this writing (mid-January 2007) a number of serious obstacles remain to achieving these remaining steps, so that it is by no means clear that a cooperative agreement will be achieved. Three qualitatively different ultimate results conceivably could emerge from this process:

1. An agreement is achieved that would be stable, in the sense of remaining in effect for approximately a decade<sup>2</sup> or longer;
2. no agreement is achieved;
3. an agreement is achieved, but proves to be unstable, in the sense of failing in significantly less than a decade.

It appears that a substantial majority of the citizenry in both of the directly affected democracies would prefer the first of these three possible outcomes. However, there are dissenters. First, both in the US and in India there are cores of strongly anti-nuclear activists who are inherently and adamantly opposed to any effort to further civil nuclear energy. Second, there are many in both countries those who would prefer agreement, or are at least neutral toward it, but only under constraints that adequately address other concerns raised by the proposed cooperation. Section III below essentially consists of an annotated list of these concerns, as linked to other concerns. Here we merely emphasize the

gravity of these concerns by noting those within the US tend to focus upon the need to maintain existing international norms regarding nuclear (non)proliferation, while those within India tend to focus upon its national security needs.<sup>3</sup> There is obviously a certain amount of tension between these two perceived needs.

Support for the proposed agreement is broad, in the hope that it will lead to the first outcome listed in the preceding paragraph, but it tends to be rather shallow, because the benefits will be spread rather diffusely. On the other hand the concerns mentioned in the preceding paragraph are very deeply held, within the seeming minority who share those concerns. As a consequence, difficulty can be expected in consummating an agreement, with the consequent possibility of the second of the above outcomes. Further, even if an initial agreement is concluded, it can be expected that some<sup>4</sup> will continue to work against this agreement, which of course could lead to the third of the above outcomes.

Almost everyone would agree that this last possibility is the least desirable of the three outcomes, if for no other reason than it will delay indefinitely the time before a stable nuclear cooperation becomes possible. Nonetheless, is a conceivable outcome, and in fact could be seen as merely continuing the normal pattern of Indo-American disagreements and misunderstandings, often centered about nuclear issues, as chronicled by Kux.<sup>5</sup> In an effort to help avoid this least desirable of all outcomes, in Section IV we briefly consider some proactive stabilizing measures that could, if adopted, help make any agreement more robust, thereby improving the likelihood of the first outcome. Our conclusion is that negotiators of subsequent steps should incorporate these measures, and should aggressively seek to identify and implement further such measures. Further we recommend this be done in a manner that crucially involves young professionals, from both countries, for reasons discussed in more detail in Section IV.

## **II. Current Status & Next Steps**

At mid-January 2007 the most recent major step toward reaching the cooperation envisioned in the joint July 18, 2005 memorandum was the signing into US law of the Hyde Act (formally the Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006, or Public Law 109-401)<sup>6</sup> on December 18, 2006. The short description of the purpose of this legislation is “to exempt from certain requirements of the Atomic Energy Act of 1954 a proposed nuclear agreement for cooperation with India.”<sup>7</sup> Important documents corollary to this legislation include the “Joint Explanatory Statement”<sup>8</sup> that is part of the Conference Report on the legislation leading to this law, and the “Signing Statement”<sup>9</sup> issued by President Bush upon the occasion of signing this legislation into law. These

documents do not have force of law *per se*, but they attempt respectively to explain the intent of the Joint Congressional Committee appointed to reconcile the House and Senate versions of the enabling legislation and the Presidential interpretation of this legislation, the latter especially in light of presumed constitutional prerogatives of the Executive branch. Of course subsequent presidents can attempt to interpret these prerogatives differently, which underlines one of the difficulties in attempting to reach a stable agreement. Eventually an agreement is most likely to be stable relative to possible shifts in US policies if it is based upon a broad public consensus.

Other milestones between the July 18, 2005 joint memorandum and the signing into law of the Hyde Act include:

- the March 2, 2006 joint statement by President Bush and Prime Minister Singh;<sup>10</sup>
- the Separation Plan that was initially presented by the Prime Minister to parliament on March 7, 2006, and subsequently amplified on May 11, 2006;<sup>11</sup> and
- the August 17, 2006 *suo moto* statement by Prime Minister Singh to the Rajya Sahab.<sup>12</sup>

This Separation Plan is intended to meet the responsibility India assumed under the July 18, 2005 joint memorandum toward “identifying and separating civilian and military nuclear facilities and programs in a phased manner.” A good summary of past events and current status, with emphasis upon the Indian Separation Plan and issues deemed relevant to the US Congress, is given in a recent Congressional Research Service (CRS) report.<sup>13</sup>

Three additional steps remain to be accomplished in order to enable the proposed cooperation:

**IAEA safeguards agreement:** Reaching such an agreement is an essential step toward India assuming its obligation under the July 18, 2005 Joint Statement<sup>14</sup> “to place voluntarily its civilian nuclear facilities under IAEA safeguards.” The commitment to such an agreement is reaffirmed in the Indian Separation Plan.<sup>15</sup>

**Nuclear Suppliers Group (NSG):** The July 18, 2005 Joint Statement<sup>16</sup> expresses the commitment that “the United States will work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India.” In the Indian Separation Plan this is more precisely specified as “the United States is committed ... to work with friends and allies to adjust the practices of the *Nuclear Suppliers Group*<sup>17</sup> to create the necessary conditions for India to obtain full access to the international fuel

market, including reliable, uninterrupted and continual access to fuel supplies from firms in several nations” (emphasis added).

**Bilateral Indo-US nuclear trade agreement:** Such an agreement is required by Section 123 of the US Atomic Energy Act of 1954,<sup>18</sup> and hence often is informally termed as a “123 agreement.” More precisely, Section 123 requires that any international cooperation from the US related to specified nuclear activities be accompanied by an agreement for cooperation that includes a list of nine specified types of content, the most salient of which is the requirement that the cooperating entity, if a non-nuclear-weapons state, shall accept so-called full-scope safeguards (“IAEA safeguards ... with respect to *all nuclear materials in all peaceful nuclear activities within the territory of such state*” [emphasis added]) “as a condition of continued United States nuclear supply.” See the Appendix for a more detailed explication of the portions of Section 123 that are particularly relevant to the present discussion.

**Present state:** At this time tentative communications have occurred on all of these steps, but significant progress does not seem to have occurred on any.<sup>19</sup> This is possibly owing to a perceived need first to allow the US Congress to complete the enabling US legislation; lack of progress with the Nuclear Suppliers Group is notwithstanding significant diplomatic activity by the Government of India (GOI).<sup>20</sup>

Undersecretary of State Nicholas Burns has been quoted as suggesting “those steps could be wrapped up in six months.”<sup>21</sup> The number and gravity of the concerns emerging from preliminary discussions on each of these steps, as discussed further in the following section,<sup>22</sup> suggests this will be a challenge. Further, apparently the bilateral agreement “cannot enter into force until it has been submitted to the Congress, along with a completed IAEA-India safeguards agreement and other documents and Presidential determinations such as a Nuclear Proliferation Assessment ... and approved by both Houses ... .”<sup>23</sup> This Congressional approval can be expected to add further to the delay in consummating the proposed cooperation; however, the procedures specified under (Subsection 104(e) of) the Hyde Act “provide for expedited consideration of a joint resolution of approval.”<sup>24</sup>

**Sequencing:** At this time it is not completely clear in what order the three required steps will be undertaken and completed. To some degree each responsible body seems to prefer to be last. It has been reported<sup>25</sup> that: “The NSG will not take any action on a US request that it grant India an exemption from the requirement of full-scope safeguards until India has completed negotiations on a bilateral nuclear cooperation agreement with the US and on a new safeguards agreement with the IAEA.” It has likewise been reported that “a

few NSG states had indicated in late 2006 that final US congressional approval of the (123) agreement would be a prerequisite for NSG lifting trade sanctions on India despite the requirement of US legislation underpinning the US-India deal that NSG must first lift trade sanctions against India.”<sup>26</sup> The US administration seems to have questioned the constitutionality of the latter requirement.<sup>27</sup> An earlier report<sup>28</sup> had suggested that “India's position is that it will complete negotiations on its safeguards agreement before the US and NSG make the decisions to enable nuclear trade, but it will not bring the agreement into force until it has secured those approvals.”

### III. Issues

The following are the principal issues that presently appear to require resolution within the three remaining steps to reaching agreement on the proposed cooperation, as summarized at the end of the preceding section.

**Linkage 1 - safeguards, fuel supply and testing:** This linked set of issues is dealt with only very broadly in the July 18, 2005 Joint Statement,<sup>29</sup> which has apparently and not surprisingly led to subsequent divergences of view of the intent in that statement. The Indian Separation Plan expressly indicates that “India will place its civilian nuclear facilities under India-specific safeguards in perpetuity and negotiate an appropriate safeguards agreement to this end with the IAEA.”<sup>30</sup> That commitment is clearly conditioned upon the US taking a number of steps to assure a reliable supply of nuclear fuel to India. Among these steps are: *i*) “seeking agreement from the U.S. Congress to amend its domestic laws ... to create the necessary conditions for India to obtain full access to the international fuel market”; *ii*) “... support an Indian effort to develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India’s reactors”; and *iii*) in event of “a disruption of fuel supplies to India ... jointly convene (with India) a group of friendly supplier countries (Russia, France and the UK are named) ... to ... restore fuel supply to India.”

The first of these steps is expressly accomplished in Section 104(a)(1) of the Hyde Act,<sup>31</sup> which has the effect of waiving the previous US legal requirement that India accept so-called full-scope safeguards in order to have access to US nuclear materials or technology. Section 103(b)(10) of the Hyde Act expressly recognizes the second of the anticipated US steps enumerated above, albeit in the somewhat cautionary and limiting form that “any nuclear power reactor fuel reserve provided ... (the GOI) ... be commensurate with reasonable reactor operating requirements.”<sup>32</sup> Some Indian commentators see an insurmountable difference between “lifetime” and “reasonable.”<sup>33</sup> Somewhat similarly the intent was expressed by Congressional conferees re the Hyde act “that the United States seek agreement among NSG members that violations by one country of an

agreement with any NSG member should result in joint action by all members, including ... termination of nuclear exports."<sup>34</sup> It has not escaped the attention of Indian commentators<sup>35</sup> that this is somewhat inconsistent with step *iii*) above.

India had hoped for,<sup>36</sup> and the Bush Administration sought, "the ability to waive existing provisions of section 129 of the AEA, which mandates the termination of U.S. civil nuclear exports to a country if that country tests a nuclear explosive device."<sup>37</sup> Nonetheless, Congress chose to write the Hyde Act to limit that ability "to any such activities India engaged in prior to July 18, 2005."<sup>38</sup> "Any such future activity by India would invoke Section 129, subject to the (not inconsiderable) waiver provisions already available to the President in existing law"<sup>39</sup> (parenthetical comment added). The consequent perceived limitation on strategic research has raised some strongly expressed concerns from Indian political figures in the opposition<sup>40</sup> and eminent Indian scientists having close ties to the DAE.<sup>41</sup> On the other hand the Joint Explanatory Statement accompanying the Hyde Act contains a more-or-less explicit recognition of India's sovereign right to self-defense, in the form of the expressed "hope that India will demonstrate restraint and not increase significantly its production of fissile material."<sup>42</sup> Recent indications are that as the totality of the Hyde Act is digested India is likely to attempt to work within this framework, albeit cautiously.<sup>43</sup>

Detailed settlement of this particular linkage is most likely to occur within the context of the 123 agreement. Those discussions undoubtedly will be significantly informed both by anti-testing sentiments within the Nuclear Suppliers Group<sup>44</sup> and by negotiations between India and the IAEA regarding details of a safeguards agreement.<sup>45</sup> An initial meeting of 123 negotiators has occurred, but it is reported that the two sides "have not begun serious work on the text."<sup>46</sup>

A number of additional concerns relative to this linkage have been expressed in the Indian press. One is the specter that "India will have to accept potentially intrusive inspections from any country it buys nuclear equipment from,"<sup>47</sup> as a consequence of recently developed IAEA guidelines providing for fallback supplier-recipient safeguards in the event the IAEA is unable to reach an agreement with the recipient. This could become a contentious issue. On the one hand it can be seen as simply providing some alternative for the cooperation to go forward, should safeguards negotiations. On the other hand it can also be perceived as depriving India of any leverage it might otherwise have had in negotiating India-specific safeguards, or their details, with the IAEA.

This linkage may well be the most contentious set of issues to be settled in the bilateral negotiations, not least because of its close connection to historical

sources of disagreement, such as the 1974 Indian nuclear detonation and subsequent events relating to fuel for the US-supplied boiling-water reactors at Tarapur. In terms of reaching an agreement it would certainly be best if the two sides had not previously restricted their own maneuvering ground by semantics such as “lifetime” and “reasonable.” One hopes that US negotiators will have the flexibility to act upon their likely understanding that it is in the best interests of nonproliferation for India to be provided a high degree of assurance on future fuel supplies. Otherwise India is more likely to seek aggressively new indigenous sources, or other fuel supplies outside the Nuclear Suppliers Group, with consequently fewer future reactors being declared as civil. In the event that the offered fuel assurance is deemed hopelessly inadequate, India ultimately could decline the cooperation, which certainly would minimize the number of its reactors under safeguards. On the other hand, one can reasonably question whether India would really be interested in buying a lifetime supply of fuel for all of its reactors. Surely purely economic factors would work strongly against that. The relevant economic factors include such matters as the volatility of the uranium market, the possibility of future greater availability of cheaper domestic supplies, and the construction and maintenance costs of storing a 30-40 year supply, all of which would work against storing a huge amount of nuclear fuel for a contingency that may never arise.

**Linkage 2 - spent fuel, reprocessing, fast breeders and nonproliferation:**

The Indian preference for disposition of spent fuel from its reactors would involve reprocessing to recover plutonium for use as fuel in its fast-breeder reactors. This is in consonance with India’s plan for use of its indigenous uranium within the context of the revered three-stage Bhabha plan to transition from PHWRs (first stage) to the thorium cycles (third stage), with fast breeders as the intermediate second stage.<sup>48</sup> Consistently with this preference, the Indian Separation Plan indicates “India is willing to accept safeguards in the ‘campaign’ mode after 2010 in respect of the Tarapur Power Reactor Fuel Reprocessing Plant.”<sup>49</sup>

American preferences toward the issues in this linkage are more complex, and somewhat schizoid. On the one hand, for some decades traditional US policy has regarded reprocessing and fast reactors as undesirable, because they lead to existence of materials in forms that are more-or-less directly usable for nuclear weapons, and therefore are regarded as a proliferation risk. This policy is affirmed in the Sections 103(a)(5), 104(b)(5) and 104(c)(2)(E) of the Hyde Act.<sup>50</sup> On the other hand, the US has always been reluctant to assume ownership of “foreign spent nuclear fuel,” defined as “nuclear fuel irradiated in any nuclear power reactor located outside of the United States and operated by any foreign legal entity, government or non-government, regardless of the legal ownership

or other control of the fuel or the reactor.”<sup>51</sup> This reluctance appears in the Hyde Act,<sup>52</sup> as the statement of United States policy in Section 103(b)(6).

Knowledgeable Indians have expressed some degree of disappointment and frustration<sup>53</sup> that the Hyde Act does not explicitly address reprocessing (presumably under safeguards) of spent fuel emanating from imports, and it only permits transfer of reprocessing technology, under Sections 104(d)(4)(B)(i)(I)-(II),<sup>54</sup> conditionally upon support of specified further objectives. At the same time a certain degree of consternation has been expressed in regard to Section 109 of the Hyde Act.<sup>55</sup> This section, which appeared for the first time in the version of the legislation reported from the joint House-Senate Conference Committee, calls for “the Secretary of Energy ... to establish a cooperative nuclear nonproliferation program to pursue jointly with scientists from the United States and India ... including scientific research and development efforts, with an emphasis on nuclear safeguards.”<sup>56</sup>

Indian concerns about involvement in cooperative nonproliferation programs generally seem focused on possible adverse effects upon national security of “intrusive non-proliferation benchmarks that are mentioned in the proposed US legislation,”<sup>57</sup> which legislation ultimately became the Hyde Act. Nonetheless, there seems at least the possibility to design a cooperative program that would be free from such concerns, and make good use of the considerable relevant Indian technical expertise.<sup>58</sup> This conceivably could also have an element of a *quid pro quo* for the possible provision of reprocessing (and enrichment) technology, as seems implicitly authorized by Section 104(c)(2)(I) of the Hyde Act. In fact something of this nature seems strongly suggested by the joint programs authorized in Sections 109(a) and 109(c)(2)(A) of the Hyde Act, and by the stipulations of Sections 104(d)(4)(B)(i)(I)-(II) as discussed earlier in this paragraph. Of course there will be concerns, on both sides, regarding the details of such a cooperative program, and there is likely to be some consequent hard bargaining within the 123 negotiations.

**Linkage 3 - A potential South Asian arms race; Pakistan, India and China:** The concern here is whether the proposed cooperation will inadvertently trigger a nuclear arms race in South Asia, with all of the attendant damage to the nonproliferation regime. This fear is fanned by analyses from US nonproliferation spokespeople such as “foreign nuclear fuel supplies would free up India’s limited domestic nuclear fuel making capacity to produce highly enriched uranium and plutonium for weapons”<sup>59</sup> and attendant Indian analyses such as: “Given India's uranium ore crunch and the need to build up our minimum credible nuclear deterrent arsenal as fast as possible, it is to India's advantage to categorize as many power reactors as possible as civilian ones to be refueled by imported uranium and conserve our native uranium fuel for

weapon-grade plutonium production.”<sup>60</sup> These viewpoints represent what Tellis<sup>61</sup> terms the “minimalist” view of the nonproliferation community, often expressed tacitly as above, that fewer Indian reactors under safeguards are preferable, in order to maximize the tension between use of indigenous uranium for energy, as opposed to weapons. This contrasts with the “maximalist” view, as represented by the fact that “in various written and oral statements to Congress, State Department officials seem to suggest that more facilities under safeguards would be better than fewer.”<sup>62</sup> Taken together, these contrasting representations of what is desirable emphasize the “catch-22” nature of any effort by India to placate the entire US nonproliferation community.

The most interesting dynamics relative to this particular linkage seem likely to play out in the NSG. It has been reported that in early NSG discussions “China had signaled that it would favor a ‘non-discriminatory’ resolution of the issue of lifting sanctions against India, suggesting that China aimed to secure an exemption for future trade with Pakistan.”<sup>63</sup> Pakistan has been represented as having no objections to the proposed Indian cooperation *per se*, provided it “is approved ... on the basis of criteria.”<sup>64</sup> The latter conceivably would open NSG guidelines to the increased nuclear cooperation China is contemplating with Pakistan,<sup>65</sup> which has alarmed some nonproliferation specialists.<sup>66</sup> Some earlier versions of the US enabling legislation had a requirement “that the NSG decision should be framed so that ‘it does not permit nuclear commerce with any non-nuclear weapon state other than India’ that does not have full-scope safeguards,”<sup>67</sup> but this requirement did not appear in the final version. This has been interpreted<sup>68</sup> as a tacit step toward possible US acquiescence in allowing enabling China to supply Pakistan (additional<sup>69</sup>) nuclear reactors, within the framework of the NSG.

#### **IV. Proactive Stabilizing Measures**

It appears that difficult, but not impossible, negotiations are ahead in reaching agreement on the various linked issues described in the preceding section, within the three remaining steps described in Section II. Further, history strongly suggests that even once agreement has been reached it will not be easy to avoid the miscalculations and miscommunications that have so frequently marred past Indo-US relations, particularly in the nuclear arena. In view of that it seems very important to ensure the bilateral Indo-US agreement incorporates elements designed to provide active development of communication channels and mutual confidence. It seems especially important that these proactive stabilizing measures provide for significant involvement of junior professionals from both the US and India. This will not only minimize the impact upon relations of some of the unfortunate past history, but it also will enhance development of commitment to those elements of a common nuclear future that meet the tests of

mutual national interests. While this will not necessarily be easy from either side, the alternative is to fail after starting down this path, with the attendant risk of ultimately arriving at a state that is less desirable to either party than the traditional "agreement to disagree." This has the potential to lead to a worsening of bilateral relations, which is an outcome that few on either side would wish,<sup>70</sup> regardless of their view of the desirability of the proposed cooperation.

In view of the depth of difficult differences enumerated in Section III, it seems dubious that the necessary balance of commitments can be achieved by adopting incremental measures from the present position. An alternative is to adopt bold measures intended to generate new feelings of confidence on both sides, through causing both to take significant steps away from current and traditional positions. Following we briefly enumerate several proactive stabilizing measures that seem feasible under current circumstances.

**Fast breeders:** As an example, one candidate target for a decidedly novel approach would be India's fast breeder reactor program. Most American technologists were disappointed that the Indian separation plan<sup>71</sup> failed to classify the 1985 Fast Breeder Test Reactor, and the under-construction Prototype Fast-Breeder Reactor, as civil facilities, notwithstanding their nominal intent as producers of civil nuclear energy. Indian technologists should be equally disappointed, as this decision effectively deprives them of the opportunity to lead the world in development of the breeder reactors that ultimately will be required by all, an opportunity that otherwise naturally falls to India because of its relatively plentiful supplies of thorium and scarcity of uranium.

The Chairman of the DAE has explained this decision as follows: "Our infrastructure for fuel cycle activities are 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."<sup>72</sup> If this is indeed the case, then a path around that obstacle would be for the US and India to collaborate in developing suitable back-end facilities, dedicated to and optimized for, fuel cycle support for the Indian fast breeder reactors, in return for India declaring all such reactors and supporting facilities as civil, subject to relevant provisions of the NPT (especially Article I), and placing them under international safeguards. This obviously would require both nations to depart from the existing mold, and thereby build confidence on either side in the commitment of the other to the proposed cooperation.

The road to a cooperation in this area seems paved by the cooperative research into nonproliferation issues portended by Sections 104(d)(4)(B)(i)(I)-

(II) and 109 of the Hyde Act.<sup>73</sup> One key to agreement toward such cooperation is possibly providing India the right to reprocess, under international safeguards, international materials for fuel within the fast-reactor cycle, in return for the *quid pro quo* of making facilities within that cycle available for research on the development of integral and minimally intrusive integral safeguards measures. It is also important that India be regarded, and enabled to perceive itself, as a full scientific and technological partner in any such endeavor, as opposed to being a mere target of safeguards.

**The thorium cycle:** More imaginatively – and consequently with more technological risk – one could consider cooperative research projects aimed at plumbing the possibility to jump directly to Stage 3 – thorium-cycle reactors – without going through the Stage 2 fast-breeder step. Again the door to such cooperation appears to be opened by Sections 104(d)(4)(B)(i)(I)-(II) and 109 of the Hyde Act.<sup>74</sup> This approach, which has also been suggested by Tellis,<sup>75</sup> has some nonproliferation advantages, because U-233 is widely considered less attractive for weapons use than Pu-239.<sup>76</sup>

**South Asian stability:** US concerns about the eventuality of an arms race in South Asia are reflected by Section 102(7) of the Hyde Act, which expresses the “sense of Congress that ... the United States should continue its policy of engagement, collaboration, and exchanges with and between India and Pakistan.”<sup>77</sup> Although this amendment has little explicit force, it does place on record the fact that the US Congress shares the concern expressed by Naeem Salik.<sup>78</sup>

Pakistan has made it clear that it would like a similar arrangement, and indeed that could in itself have some stabilizing effect. On the US side the clearest impediment to such cooperation is the reputed engagement of segments within Pakistan in horizontal proliferation. Nonetheless, US concerns as expressed in the preceding paragraph suggest the possibility of engaging with Pakistan in programs designed to promote nuclear security – of course as consistent with concerns for national security, on all sides. Section 102(7) of the Hyde Act, as mentioned above, opens the door to such efforts, even of a tripartite nature. Unfortunately it does not, in and of itself, provide the resources necessary to realize any such effort.

## **Appendix: Section 123**

The following is adapted from Section 123 of the Atomic Energy Act of 1954, as subsequently amended many times.<sup>79</sup> Text in square brackets ([...]) has been

added by way of either explanation or abbreviation, as should be clear from context:

“No cooperation with any nation, group of nations or regional defense organization pursuant to ... (a list of sections describing covered nuclear-related activities) ... shall be undertaken until-

- a. the proposed agreement for cooperation has been submitted to the President, which proposed agreement shall include ... [list of nine clauses, specifying required contents, the most salient of which is:]
  - (2) in the case of non-nuclear-weapon states, a requirement, as a condition of continued United States nuclear supply under the agreement for cooperation, that IAEA safeguards be maintained with respect to all nuclear materials in all peaceful nuclear activities within the territory of such state, under its jurisdiction, or carried out under its control anywhere [this is the so-called “full-scope safeguards requirement.]; ...

The President may exempt a proposed agreement for cooperation (except an agreement arranged pursuant to subsection 91c., 144b., 144c., or 144d.110 [Collectively these define activities related to nuclear-weapons technology.]) from any of the requirements of the foregoing sentence if he determines that inclusion of any such requirement would be seriously prejudicial to the achievement of United States non-proliferation objectives or otherwise jeopardize the common defense and security. Except in the case of those agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d [nuclear weapons] any proposed agreement for cooperation shall be negotiated by the Secretary of State, with the technical assistance and concurrence of the Secretary of Energy and after consultation with the Commission shall be submitted to the President jointly by the Secretary of State and the Secretary of Energy accompanied by the views and recommendations of the Secretary of State, the Secretary of Energy and the Nuclear Regulatory Commission. Each Nuclear Proliferation Assessment Statement prepared pursuant to this Act shall be accompanied by a classified annex, prepared in consultation with the Director of Central Intelligence, summarizing relevant classified information. The Secretary of State shall also provide to the president an unclassified Nuclear Proliferation Assessment Statement (A) which shall analyze the consistency of the text of the proposed agreement for cooperation with all the requirements of this Act, with specific attention to whether the proposed agreement is consistent with each of the criteria set forth in this subsection, and (B) regarding the adequacy of the safeguards and other control mechanisms and the peaceful use assurances contained in the agreement for cooperation to ensure that any assistance furnished thereunder will not be used to further any military or nuclear explosive

purpose. In the case of those agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d [nuclear weapons], any proposed agreement for cooperation shall be submitted to the President by the Secretary of Energy or, in the case of those agreements for cooperation arranged pursuant to subsection 91c., or 144b., which are to be implemented by the Department of Defense, by the Secretary of Defense:

- b. ...
- c. ...
- d. the proposed agreement for cooperation (if arranged pursuant to subsection 91c., 144b., 144c., or 144d., or if entailing implementation of section 53, 54a., 103, or 104 in relation to a reactor that may be capable of producing more than five thermal megawatts or special nuclear material for use in connection therewith) has been submitted to the Congress, together with the approval and determination of the President, for a period of sixty days of continuous session ..., but such proposed agreement for cooperation shall not become effective if during such sixty-day period the Congress adopts, and there is enacted, a joint resolution stating in substance that the Congress does not favor the proposed agreement for cooperation [This is the procedure that, according to the Joint Explanatory Statement accompanying the Hyde Act,<sup>80</sup> the Administration proposed for the legislation enabling the proposed US-India civil nuclear cooperation.]: *Provided, That* the sixty-day period shall not begin until a Nuclear Proliferation Assessment Statement prepared by the Secretary of State, and any annexes thereto, when required by subsection 123a., have been submitted to the Congress: *Provided further,* That an agreement for cooperation exempted by the President pursuant to subsection a. from any requirement contained in that subsection shall not become effective unless the Congress adopts, and there is enacted, a joint resolution stating that the Congress does favor such agreement. [This appears to be the procedure adopted under Subsection 104(e) of the Hyde Act.<sup>81</sup>] During the sixty-day period the Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate shall each hold hearings on the proposed agreement for cooperation and submit a report to their respective bodies recommending whether it should be approved or disapproved. Any such proposed agreement for cooperation shall be considered pursuant to the procedures set forth in section 130i. of this Act. [This section appears to specify detailed procedures for timely action upon a joint resolution.]

...

If, after the date of enactment of the Nuclear Non-Proliferation Act of

1978, the Congress fails to disapprove a proposed agreement for cooperation which exempts the recipient nation from the requirement set forth in subsection 123a.(2), such failure to act shall constitute a failure to adopt a resolution of disapproval pursuant to subsection 128b.(3) for purposes of the Commission's consideration of applications and requests under section 126a.(2) and there shall be no congressional review pursuant to section 128 of any subsequent license or authorization with respect to that state until the first such license or authorization which is issued after twelve months from the elapse of the sixty-day period in which the agreement for cooperation in question is reviewed by the Congress.

## Endnotes

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1 George W. Bush and Manmohan Singh, "Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh," The White House, July 18, 2005 (<http://www.whitehouse.gov/news/releases/2005/07/20050718-6.html>), accessed January 13, 2007.

2 This is approximately the time that would be required for achievement of tangible results of the cooperation, within India. Such tangible results might, for example, include: i) completion of nuclear power plants based upon access to international nuclear technology and the international market for nuclear materials; and ii) access to the international nuclear materials market to provide fuel for India's indigenous PHWRs for a period sufficiently long to develop adequate indigenous uranium sources to overcome the current generally (but not universally) accepted shortfall.

3 Such concerns led Prime Minister Singh to assert "a solemn assurance to this august House and through the Honorable members to the country, that the Separation Plan will not adversely effect our country's national security." ("Prime Minister's Suo Motu Statement on Discussions on Civil Nuclear Energy Cooperation with the US: Implementation of India's Separation Plan," *The Hindu*, March 7, 2006 (<http://www.hindu.com/thehindu/nic/suomotuu.htm>), accessed January 17, 2006).

4 Certainly anti-nuclear activists can be expected to exploit, to this end and very aggressively, both nonproliferation concerns in the US and national security concerns in India.

5 Dennis Kux, *India and the United States: Estranged Democracies*, National Defense University Press, Washington, DC, 1992.

6 At this writing the law itself apparently has yet to be printed by the Government Printing Office. As "enrolled" (passed by House and Senate) the text of the Hyde Act is available by search of Thomas (<http://thomas.loc.gov/>), for example under Bill No. HR 5682, 109th Congress, or House Report 109-721, or pages H8934-H8950 of the Congressional Record for the 109th Congress.

7 Cf. Thomas, *op cit*.

8 The relevant "Joint Explanatory Statement of the Committee of Conference" is published at the end of the legislation as "enrolled," *op cit*.

9 George W. Bush, 'President's Statement on H.R. 5682, the "Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006,"' The White House, December 18, 2006 (<http://www.whitehouse.gov/news/releases/2006/12/20061218-12.html>), accessed January 13, 2007).

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- 10 George W. Bush and Manmohan Singh, "U.S.-India Joint Statement," The White House, March 2, 2006, (<http://www.whitehouse.gov/news/releases/2006/03/20060302-5.html>), accessed January 13, 2007)
- 11 "Implementation of the India-United States Joint Statement of July 18, 2005: India's Separation Plan," <http://www.dae.gov.in/press/sepplan.pdf>, accessed January 13, 2006.
- 12 M. Singh, "Statement of PM in Rajya Sabha on the India-US Nuclear Agreement," Office of the Prime Minister, August 17, 2006, <http://pmindia.nic.in/parl/pcontent.asp?id=30> (accessed January 17, 2006).
- 13 Sharon Squassoni, "India's Nuclear Separation Plan: Issues and Views," Congressional Research Service Report No. RL33292, December 22, 2006 (<http://www.fpc.state.gov/documents/organization/78421.pdf>, accessed January 13, 2007).
- 14 *Op cit.*
- 15 *Op cit.*
- 16 *Op cit.*
- 17 "The Nuclear Suppliers Group (NSG) is a group of nuclear supplier countries which seeks to contribute to the non-proliferation of nuclear weapons through the implementation of Guidelines for nuclear exports and nuclear related exports." From "Nuclear Suppliers Group (NSG)," <http://www.nuclearsuppliersgroup.org/> (accessed January 18, 2007), which contains further details.
- 18 *Op cit.*
- 19 For the most recent official Indian perspective available at this time see Pranab Mukherjee, "Suo-Moto Statement by the Minister Of External Affairs, Mr. Pranab Mukherjee on Indo-US Civil Nuclear Co-Operation in Lok Sabha," Embassy of India, December 12, 2006. ([http://www.indianembassy.org/newsite/press\\_release/2006/Dec/6.asp](http://www.indianembassy.org/newsite/press_release/2006/Dec/6.asp), accessed January 17, 2007).
- 20 See, e.g., Paragraph 11 of M. Singh, August 17, 2006, *op cit.*
- 21 Peter Baker, "Bush Signs India Nuclear Law," Washington Post, December 19, 2006.
- 22 See also O. P. Sabherwal, "Benefits of Indo-US Deal: Nuclear renaissance in the offing," *The Tribune*, Chandigarh, January 1, 2007 (<http://www.tribuneindia.com/2007/20070101/edit.htm#5>, accessed January 15, 2006); and Pramit Mitra and Teresita Schaffer, "Nuclear Cooperation with India: Storms Ahead," Center for Strategic and International Studies, December 19, 2006 ([http://www.csis.org/component/option,com\\_csis\\_progj/task/view/id,867/](http://www.csis.org/component/option,com_csis_progj/task/view/id,867/), accessed January 15, 2007).
- 23 "Joint Explanatory Statement," *op cit.*
- 24 *Ibid.*
- 25 Mark Hibbs, "More delays loom over decision on NSG trade sanctions and India," *NuclearFuel*, Vol. 32, No. 1, pg. 11, January 1, 2007.
- 26 *Ibid.*
- 27 George W. Bush, "President's Statement on H.R. 5682," *op cit.*
- 28 Daniel Horner and Sunil Saraf, "Nuclear Deal with India still faces many hurdles after clearing Capitol Hill," *NuclearFuel*, Vol. 31, No. 26, pg. 1, December 18, 2006.
- 29 In this statement (*op cit.*) President Bush indicated that "as a responsible state with advanced nuclear technology, India should acquire the same benefits and advantages as other such states" and that he "would also seek agreement from Congress to adjust U.S. laws and policies, and the United States will work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India." "The Prime Minister conveyed that ... 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 United States." He further indicated "these

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responsibilities and practices consist of ... continuing India's unilateral moratorium on nuclear testing ... and ensuring that the necessary steps have been taken to secure nuclear materials and technology through comprehensive export control legislation and through harmonization and adherence to Nuclear Suppliers Group (NSG) guidelines."

Unfortunately differing interpretations have subsequently emerged of terms such as "same benefits and advantages," "full civil nuclear cooperation" and "continuing India's unilateral moratorium on nuclear testing."

30 *Op cit.*, Subsection 15c). Submission of such a plan was a commitment in the July 18, 2005 Joint statement, *op cit.*

31 *Op cit.*

32 Hyde Act, *op cit.*

33 Brahma Chellaney, "A year of nuked promises," *The Asian Age*, January 13, 2006,

<http://www.asianage.com/presentation/columnisthome/brahma-chellaney.aspx> (accessed January 23, 2007).

34 "Joint Explanatory Statement," *op cit.*

35 Siddharth Varadarajan, "U.S. Congress for killer clause in Nuclear Suppliers Group guidelines," *The Hindu*, Dec. 12, 2006, <http://www.hindu.com/2006/12/11/stories/2006121105551200.htm> (accessed January 23, 2007).

36 India's expectations in this regard are well-expressed in Paragraph 13(v) of M. Singh, August 17, 2006, *op cit.* "the ... Separation Plan provides for an India-Specific Safeguards Agreement with the IAEA, with assurances of uninterrupted supply of fuel to reactors that would be placed under IAEA safeguards together with India's right to take corrective measures in the event fuel supplies are interrupted. ... An important assurance is the commitment of support for India's right to build up strategic reserves of nuclear fuel over the lifetime of India's reactors. We have initiated technical discussions at the expert level with the IAEA on an India-Specific Safeguards Agreement. Both the Bilateral Nuclear Cooperation Agreement with the United States and the India-Specific Safeguards Agreement with the IAEA would be only within the parameters of the July (18) Statement and the March Separation Plan. There is no question of India signing either a Safeguards Agreement with the IAEA or an Additional Protocol of a type concluded by Non-Nuclear Weapons States who have signed the NPT."

37 Joint Explanatory statement, *op cit.*

38 *Ibid.*

39 *Ibid.*

40 "N-deal places new controls on India: Advani," *Rediff India Abroad*, December 19, 2006

<http://www.rediff.com/news/2006/dec/19ndeal10.htm>, accessed January 16, 2007).

41 For example, M. R. Srinivasan, "India may lose control of its nuclear future," *The Hindu*, December 14, 2006

<http://www.hindu.com/2006/12/14/stories/2006121404141000.htm>, accessed January 15, 2006); also "India's nuclear

czars wary of US deal," *The Times of India*, December 16, 2006

[http://timesofindia.indiatimes.com/Nuclear\\_deal/Indias\\_nuclear\\_czars\\_wary\\_of\\_US\\_deal/articleshow/msid-](http://timesofindia.indiatimes.com/Nuclear_deal/Indias_nuclear_czars_wary_of_US_deal/articleshow/msid-822097.curpg-2.cms)

[822097.curpg-2.cms](http://timesofindia.indiatimes.com/Nuclear_deal/Indias_nuclear_czars_wary_of_US_deal/articleshow/msid-822097.curpg-2.cms), accessed January 15, 2006); and "Hyde Act and nuclear scientists' note," *The Hindu*, December 16,

2006, <http://www.hindu.com/2006/12/16/stories/2006121616171500.htm> (accessed January 16, 2007).

42 Joint Explanatory Statement, *op cit.*

43 See, for example, Rajeev Deshpande, "India hopes to keep N-test out of 123," *The Times of India*, January 12, 2007

[http://timesofindia.indiatimes.com/NEWS/India/India\\_hopes\\_to\\_keep\\_N-test\\_out\\_of\\_123/articleshow/1143738.cms](http://timesofindia.indiatimes.com/NEWS/India/India_hopes_to_keep_N-test_out_of_123/articleshow/1143738.cms),

accessed January 15, 2007). Shyam Saran, the Indian Prime Minister's special envoy on nuclear issues and India's

negotiator on the cooperation has been quoted as saying "India will retain the right to conduct nuclear test but would

have to be prepared for repercussions" ("India will 'walk-out' of N-deal if interests are undermined," *Rediff India Abroad*,

January 11, 2007, <http://www.rediff.com/news/2007/jan/11ndeal.htm>, accessed January 15, 2007) .

44 See Rajeev Deshpande, *op cit.*

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45 For more-or-less recent reports on the status of the IAEA safeguards agreement for India see: Diplomatic Correspondent, "Talks with IAEA on India-specific safeguards accord," *The Hindu*, July 9, 2006; Mark Hibbs, "IAEA governors opposing unique safeguards protocol for India," *Nucleonics Week*, Vol. 47, Iss. 39, pg. 1, September 28, 2006.

46 Assistant Secretary of State for South and Central Asian Affairs Richard Boucher, as quoted in Daniel Horner, "US, India make little headway in talks as bill nears vote," *Nucleonics Week*, Vol. 16, Iss. 46, pg. 10, Nov. 16, 2006.

47 Siddharth Varadarajan, "U.S. got NSG inspection rule tightened for India," *The Hindu*, Dec. 12, 2006, <http://www.hindu.com/2006/12/12/stories/2006121204031200.htm> (accessed January 20, 2007).

48 For a more detailed description of this plan see the document "Long Term Vision of the Department of Atomic Energy," <http://www.dae.gov.in/publ/vision.pdf>, accessed January 16, 2007.

49 *Op cit.*, Section 14.vi). "Campaign mode" presumably means when fuel of international origin is being reprocessed.

50 *Op cit.*

51 Quotation from Section 131.f.(4) of the *Atomic Energy Act of 1954*, as amended. For the version of the *Atomic Energy Act of 1954* current circa 2006, see Office of the General Counsel, "Nuclear Regulatory Legislation: 109th Congress," Nuclear Regulatory Commission, Chapter 1, Vol. 1, June 2006 ([http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0980/#publication\\_info](http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0980/#publication_info), accessed January 15, 2007), esp. pp. 1-55 through 1-59 for Section 123.

52 *Op cit.*

53 *Rediff India Abroad*, January 11, 2007, *op cit.*; M. R. Srinivasan, *op cit.*; Sudha Ramachandran, "India fears US nuclear trap," *Asia Times*, December 20, 2006 ([http://www.atimes.com/atimes/South\\_Asia/HL20Df01.html](http://www.atimes.com/atimes/South_Asia/HL20Df01.html), accessed January 16, 2007)

54 In abbreviated form these sections indicate "... authorizations for the transfer or retransfer to India of ... technology related to ... the reprocessing of spent nuclear fuel ... may only be approved if the end user (I) is a multinational facility participating in an IAEA-approved program to provide alternatives to national fuel cycle capabilities; or (II) is a facility participating in, and the ... transfer, or retransfer is associated with, a bilateral or multinational program to develop a proliferation-resistant fuel cycle."

55 "India's nuclear czars wary of US deal," *op cit.*; "Hyde Act and nuclear scientists' note," *op cit.*; "Bush clears air over deal, leaves window open," *The Indian Express*, December 19, 2006, <http://www.indianexpress.com/story/18984.html> (accessed January 16, 2006); and "Nuclear Deal with USA: India Gets Cold Feet," *Care2 news network*, <http://www.care2.com/news/member/434996229/253286> (accessed January 16, 2007) .

56 Hyde Act, *op cit.*

57 Arun Shourie, "Time to deal with the aftermath," *Indian Express*, November 30, 2006, <http://www.indianexpress.com/story/17571.html> (accessed January 19, 2007).

58 This possibility seems to find some support in the expressed Indian commitment "... to creating a climate where our scientists and technologists can participate in and contribute to international initiative in various fields," Pranab Mukherjee, *op cit.*

59 Thomas Cochran *et al.* "Dear Member of Congress," June 20, 2006, [www.npec-web.org/Essays/20060620-LetterOnArticleOne.pdf](http://www.npec-web.org/Essays/20060620-LetterOnArticleOne.pdf), accessed September 11, 2006 See Ashley J. Tellis, *Atoms for War?: U.S.-Indian Civilian Nuclear Cooperation and India's Nuclear Arsenal* (Washington, D.C., , Carnegie Endowment for International Peace), 2006, <http://www.carnegieendowment.org/files/atomsforwarfinal4.pdf>, accessed November 27, 2006, for further variants on this argument, attributed by Tellis (p. 6) to Henry Sokolski. For a supporting technical materials analysis see Zia Mian, A. H. Nayyar, R. Rajaraman and M. V. Ramana, "Fissile Materials in South Asia and the Implications of the U.S.-India Nuclear Deal," *Science and Global Security*, Vol. 14, Nos. 2&3, pp. 117-143, 2006. For an alternative analysis of the proliferation implications of essentially the same technical facts see Paul Nelson, Taraknath V. K. Woddi and William S.

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Charlton, "Comments on "Fissile Materials in South Asia and the Implications of the U.S.-India Nuclear Deal," submitted, preprint available at <http://nuclear.tamu.edu/~pnelson/preprints/SGS-Nelson-Woddi-Charlton.pdf> (accessed January 25, 2007).

60 K. Subrahmanyam, "India and the nuclear deal," *The Times of India*, December 12, 2005, [http://timesofindia.indiatimes.com/OPINION/Editorial/India\\_and\\_the\\_nuclear\\_deal/articleshow/msid-1327306,curpg-4.cms](http://timesofindia.indiatimes.com/OPINION/Editorial/India_and_the_nuclear_deal/articleshow/msid-1327306,curpg-4.cms) (accessed January 20, 2007).

61 Tellis, *op cit.*

62 Squassoni, *op cit.*

63 Mark Hibbs, "NSG plenary meeting makes no progress on India issue," *NuclearFuel*, Vol. 31, No. 13, pg. 3, June 19, 2006.

64 Mark Hibbs, "Unique NSG exception for India would discriminate, Pakistan says," *NuclearFuel*, Vol. 31, No. 24, pg. 1, November 20, 2006.

65 Mark Hibbs, "US, Pakistan don't agree on NSG terms covering China," *NuclearFuel*, Vol. 31, No. 24, pg. 1, November 20, 2006.

66 Daniel Horner, "Congress passes US-India bill without new conditions for nuclear trade," *Nucleonics Week*, Vol. 47, Iss. 50, pg. 1, Dec. 14, 2006.

67 *Ibid.*

68 Horner, Dec. 14, 2006, *op cit.*

69 Mark Hibbs, "US, Pakistan don't agree on NSG terms covering China," pg. 1, *op cit.*

70 Certainly the general tenor of the July 26, 2006 debate in the US House of Representatives (search on date and "India" from <http://thomas.loc.gov/home/r109query.html>, accessed September 9, 2006), on the "Henry J. Hyde United States and India Nuclear Cooperation Promotion Act of 2006," made it clear that at this time there are few US representatives who were willing overtly to espouse anything other than a spirit of considerable good will toward India. This may not be unrelated to the increasing political sophistication of the Indian diaspora within the US (Mike McIntire, "Indian-Americans Test Their Clout on Atom Pact," *New York Times*, June 5, 2006).

71 *Op cit.*

72 T. S. Subramanian, "Reactors put under safeguards should get fuel from the international market," an interview with Anil Kakodkar, Chairman, Atomic Energy Commission and Secretary, Department of Atomic Energy, *The Hindu*, March 17, 2006.

73 *Op cit.*

74 *Op cit.*

75 "Atoms for War?," *op cit.*, p. 51.

76 This is because: "Uranium-232 is almost always present with U-233 and has as part of its decay chain Tl-208, which emits a highly penetrating 2.6-MeV gamma-ray accompanying its beta decay to stable Pb-208. Because of this emission, U-233 requires special shielding and remote handling." (From p. 15 of P. J. Bereolos *et al.*, "Strategy for the Future Use and Disposition of Uranium-233: History, Inventories, storage Facilities, and Potential future Uses," Report ORNL/TM-13551, Oak Ridge National Laboratory, June 1998.)

77 This clause has its origin in an amendment to the enabling US House bill, offered by Representative Jackson-Lee (Texas) and adopted by voice vote, which read as follows: "The South Asia region is so important that the United States should continue its policy of engagement, collaboration, and exchanges with and between India and Pakistan."

78 Naeem Salik, "Minimum Deterrence and India Pakistan Nuclear Dialogue: Case Study on Pakistan," LNCV South Asia Security Project, Working Paper 1/2006, March 2006.

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79 *Op cit.*

80 *Op cit.*

81 *Op cit.*