

A FISSBAN WITH OR WITHOUT EXISTING STOCKS: TO BE OR NOT TO BE?

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Just as Shakespeare, in writing Hamlet's famous speech, was faced with a philosophical dilemma over the advantages and disadvantages of human existence, equally conflicting differences exist over whether a treaty banning the production of fissile material for military purposes (Fissban) should include pre-existing stocks of such material. These fundamental differences, together with the controversy over ways to cap, if not prohibit the use of the nuclear fuel cycle and highly enriched uranium (HEU) in the civilian sector, and whether or not a Fissban should be verifiable, raise the question whether there should be a Fissban at all. To paraphrase a group of other Englishmen (the British punk band The Clash) "should it stay or should it go"?

Answering these complex and politically loaded questions requires some reflection on the history to the current conundrum in international efforts to negotiate a non-discriminatory multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.

Notwithstanding the agreements reached at the Conference on Disarmament (CD) and at the 2000 NPT Review Conference, resolving the issues of scope and verification remains critical for successful negotiations of a Fissban. The principal disagreement over scope has to do with whether the Fissban should deal with pre-existing stocks.

HISTORICAL CONTEXT

A key U.S. policy objective: One can of course go back to the 1946 Baruch Plan and President Eisenhower's 1953 "Atoms for Peace" speech to look for original US thinking on a Fissban including that "(t)he United States would seek more than the mere reduction or elimination of atomic materials for military purposes"

With the end of the Cold War and the perceived need to make progress in arms control, the concept of a fissile material cut-off treaty as a separate instrument was given considerable impetus by the United States. In his speech to the United Nations General Assembly in September 1993, President Bill Clinton stated that: "We will pursue new steps to control the materials for nuclear weapons. Growing global stockpiles of plutonium and highly enriched uranium are raising the danger of nuclear terrorism in all nations. We will press for international agreement that would ban production of these materials for ever." As a result the General Assembly adopted a consensus resolution entitled "Prohibition of the production of fissile materials for nuclear weapons or other nuclear explosive devices", which recommended "the negotiation in the most appropriate international forum of a non-discriminatory multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices."

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Following the General Assembly resolution, the United States launched an even more active campaign among key non-nuclear weapon States (NNWS), arguing that its proposal for a global ban on the production of nuclear material for weapons was linked to the indefinite extension of the NPT. It is interesting to note that in a letter to then South Africa president Nelson Mandela, President Clinton linked U.S. commitment to both a CTBT and a “global ban on the production of nuclear weapons material,” as well as the reduction of nuclear warheads by both the United States and the Russian Federation under the START I and II treaties to the NPT’s indefinite extension. In calling on President Mandela to make a public call for the indefinite and unconditional extension of the NPT, he stated that “if the duration would be placed in question, further arms control progress would become far more difficult.” It is assumed that similar promises were made to many other key players prior to the 1995 Review and Extension Conference.

An underlying motive in the U.S. approach during the 1990s, as opposed to today, was of course to capture the states outside the NPT, most notably India and Pakistan under a universal ban of fissile material production. The U.S. position has since of course changed and it now believes that effective verification of a Fissban cannot be achieved, even with extensive verification mechanisms and provisions. The U.S. is furthermore adamant that a future Fissban should not include activities involving fissile material produced prior to entry into force of the Treaty. Judging by the provisions of the proposed U.S./India nuclear cooperation deal, lucrative nuclear technology and material sharing now outweighs the importance of capping India’s nuclear weapons program.

A UN General Assembly priority: The 1993 General Assembly envisaged the treaty as covering the production of weapon-grade plutonium, weapon-grade highly-enriched uranium, and uranium-233 for nuclear weapons or other nuclear explosive devices, as well as production outside the international safeguards system. The General Assembly also requested the IAEA to provide assistance for examination of verification arrangements for such a treaty, but it did not specify the Agency’s role. Although previous UN resolutions referred to the “production and stockpiling” of fissile materials, the 1993 resolution dropped reference to stockpiles in order to gain consensus. Nevertheless, while not specifically addressing existing stocks of fissile materials, the resolution described the treaty banning production as “a significant contribution to nuclear non-proliferation in all its aspects”.

Despite the 5-year timeframe for concluding Fissban negotiations agreed at the 2000 NPT Review Conference, subsequent General Assembly resolutions dropped this requirement to maintain consensus. Today, the FissBan resolution does no longer enjoy consensus support since the United States voted for the first time against the resolution opening the door for at least two other members of the Conference on Disarmament (CD) - Israel and the United Kingdom - to also question the 1995 Shannon mandate. The consequence of this development signaled further deadlock at the CD, and placed into question the relevance of the CD as a disarmament negotiating body. It also complicated – if not jeopardized – any chances to achieve success at the 2005 NPT Review Conference.

Following the dismal outcomes of both the 2005 NPT Review Conference and the World Summit, the sixtieth General Assembly for the first time since 1993 did not consider a Fissban resolution. Canada - its traditional sponsor - ostensibly decided to avoid another divisive vote on the Shannon mandate, and to avoid confrontation with the United States and other CD members who by now have started to question the original mandate.

A CD mandate: When the CD adopted the report by its Special Co-coordinator Ambassador Shannon in March 1995, it agreed to establish an ad hoc Committee “to negotiate a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.” Although basing the core negotiating mandate for the ad hoc Committee on the 1993 General Assembly resolution, the Shannon Report also stated that this did not preclude any delegation from raising the issues of scope and verification within the Committee.

At the time the NPT NWS and India supported a mandate that would only permit consideration of future production of fissile material. Many other CD members however argued that the mandate should also include consideration of past production. Yet another group wanted the treaty to relate not only to production of fissile materials (past or future), but also to other issues, such as the management and physical security of such material.

The language in the Shannon Report reflected this diversity of views among CD members, and its ‘permission’ to raise wider issues was viewed as necessary to get consensus on the mandate in time for the 1995 NPT Review and Extension Conference. Of course the CD never really got started with active negotiations on a Fissban. While at the end of its 1998 session, the CD did establish an ad hoc committee chaired by Canadian Ambassador Mark Moher, very little progress was made before the 1998 session ended. CD negotiations have since been held hostage to other issues related to its program of work, including wider issues of nuclear disarmament and negotiations on a treaty to ban an arms race in outer space.

A Fissban & the NPT: The achievement of the CD agreement to negotiate a Fissban based on the Shannon report and the mandate contained therein is held aloft as one of the grand commitments made by the NWS in return for wide support of indefinite extension of the NPT. The package of integral decisions adopted at the 1995 Conference, thus provided a way for all states parties to support the indefinite decision while providing for the ways and means through which progress toward achieving nuclear disarmament and nonproliferation could be achieved. A key element of this package was the “Principle and Objectives for Nuclear Non-proliferation and Disarmament” which explicitly included a call for the “immediate commencement and early conclusion of negotiations” of a fissile material treaty in accordance with the Shannon mandate.

The success of the much heralded 2000 NPT Review Conference was largely hooked onto the unequivocal undertaking by the NWS to accomplish the total elimination of their nuclear arsenals as part of thirteen practical steps for the systematic and progressive implementation of Article VI. A key component of these practical steps was the agreement on the necessity of negotiations in the CD on a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other explosive devices in accordance with the statement of the Special Coordinator in 1995 and the mandate contained therein, taking into consideration both nuclear disarmament and nuclear non-proliferation objectives. The 2000 agreement not only solidified the 1995 agreement to immediately start negotiations on the FMCT, but the agreement by all NPT parties that such negotiations should take into consideration both nuclear disarmament and nuclear non-proliferation objectives bolstered the aspirations of a large majority of states to ensure that existing stocks are also covered by a future Fissban treaty.

The 2000 agreement was, however, inherently flawed in that it required negotiations to commence in the context of an agreed program of work in the CD. Many other agreements reached at both the 1995 and 2000 conferences have since been questioned, leading many to

believe that the accompanying agreement on the indefinite extension of the treaty was equally flawed.

Disagreement over the mandate of fissile material ban negotiations was one of many fault lines at the 2005 Review Conference. While the majority of states called for the continued maintenance of military production moratoria until the negotiation of a Fissban in accordance with the original mandate, U.S. opposition to the original mandate clearly influenced a number of key states with the result that the United Kingdom, France, and even the European Union called for negotiations to commence without reference to the Shannon mandate.

OBJECTIVES OF A FISSBAN

A Fissban would prohibit production of fissile material for nuclear-weapon or nuclear-explosive purposes by all parties, including the NPT nuclear-weapon states and the non-NPT states. It would not aim to ban possession of nuclear weapons made by the nuclear-armed states with previously produced fissile material. As such the objectives of a FissBan could be relatively simple:

Achieving NPT ideals: While not directly addressed, clear reference to the “cessation of the manufacture of nuclear weapons, the liquidation of all (their) existing stockpiles, and the elimination from national arsenals of nuclear weapons and their means of delivery” is made in the preamble to the treaty. Expressed as a “desire”, this preambular reference is further emphasized in Article VI which requires State parties to undertake “negotiations in good faith on effective measures to cessation of the nuclear arms race at an early date and to nuclear disarmament”. In achieving the goals of the NPT, the original drafters had the foresight to envisage that control over nuclear weapons materials and the cessation of their production for weapons purposes could lead to a quantitative capping of the number of weapons in existence and to laying the foundation for their eventual elimination.

Achieving the ideals embodied in the NPT would be important steps in the complex political and technical process of nuclear disarmament. Following on the 1995 NPT Review and Extension Conference and in terms of the "Principles and Objectives" adopted there, the CTBT, has already been finalized. A further step in the process, but also an adjunct to the NPT would be a Fissban. A fissile material treaty is therefore one of several tools to accomplish the NPT's objectives.

Reinforce nonproliferation commitments of all states: All Parties to a FissBan would commit not to produce fissile material for nuclear weapons by preventing altogether or regulating in all states the further production of weapons-grade materials for legitimate (non-proscribed) uses such as fuel for research reactors, naval reactors, etc. Since NNWS NPT states are already subject to a stronger commitment, a FissBan would impose new limitations only on the five NPT weapon states and the four countries that are not parties to the NPT (Israel, India, Pakistan and North Korea). A FissBan would turn the informal, non-binding production moratorium declared by four of the five NPT nuclear weapon states into a binding commitment. While China indicated informally that it had ended or suspended production of fissile material for weapons, it is under no legal or political obligation to do so. A FissBan would also cap the stockpiles of the four countries not parties to the NPT, all of which may still be producing fissile materials for weapons.

A verifiable treaty would, however, reinforce the nonproliferation commitments of the NNWS under the NPT. Given strong opposition by several of these states to a ban or limited the use of

HEU in the civilian sector, a legally binding and verifiable approach under a Fissban could address this objective if linked to nuclear arms reductions.

A Fissban could also prohibit the transfer of previously-produced fissile material between weapon states for weapon purposes. Such transfers are for instance allowed under the US-UK Mutual Defense Agreement for both weapons manufacture and naval-reactor fuel. In recent times, the transfers have been primarily HEU for naval reactor fuel. Such transfers could continue if some binding pledge could be given, or means of transparency and verification could be established, to provide confidence that the HEU was not being used for weapons purposes and that the fissile material treaty's principles were being upheld. In any case, given the size of the U.K.'s declared HEU stockpile and the modest rate at which its nuclear submarines consume HEU, the United Kingdom is unlikely to need additional HEU for many decades.

Irreversibly reduce weapon stocks: A Fissban that prohibits (re)use of fissile material in civilian use or declared excess for weapons use, would make nuclear-weapon reductions irreversible. Capturing in an irreversible way weapons material declared as excess in an ongoing process. To this end a Fissban should prohibit the use in weapons of previously-produced fissile materials in use for non-military purposes; in a weapon-production complex but declared to be excess to military needs, and in a reserve for future use as fuel in military (e.g. naval-propulsion) reactors.

Improve national monitoring and safety and security of stockpiled fissile material: Given heightened international concerns over nuclear proliferation and the potential of nuclear terrorism, international monitoring of civilian fissile materials and weapons material declared as excess in all countries would improve national accounting and control of fissile material in the civilian sector, and secure these materials against diversion to non-state actors.

Verification to prevent re-use: Making "closed-down/decommissioned" production and associated facilities, and facilities used to weapons material declared as excess subject to verification to prevent their re-use for weapons purposes.

Reduce NPT discrimination: With its two categories of states, the NPT is discriminatory and will remain so as long as some states have nuclear weapons. A Fissban would reduce the discriminatory aspects of the NPT by subjecting at least the civil-nuclear sectors of the NWS to international monitoring. A verifiable treaty would represent a first-ever set of compulsory safeguards on nuclear-weapon-useable materials in the nuclear-weapon states. It would also redress a long-standing concern of the nuclear industry in the non-weapon states that it is disadvantaged relative to the industries in the weapon states by having to accept IAEA monitoring.

CAPTURING FISSILE MATERIAL STOCKS

For the purposes of the FissBan, fissile material could be defined to be any material that the IAEA considers "direct-use material," i.e., material that could be used to make a practical fission explosive. This includes highly enriched uranium (HEU) containing more than 20% U-235 and plutonium containing less than 80% Pu-238. Tritium is not a fissile material, but without tritium many types of modern nuclear weapons will become ineffective. It is consequently considered unlikely that there would be agreement to include tritium in a FissBan because of definitional and political problems.

Existing stocks of fissile material are dominated by highly enriched uranium and plutonium produced by the Soviet Union and the United States for weapons during the Cold War and by civil plutonium separated from spent power-reactor fuel in France, the United Kingdom and Russia. It is estimated that globally between 1200 and 2000 metric tons of fissile materials are kept in stockpiles, including some 50 tons of civilian HEU and 240 tons of Pu. This figure does not include weapons grade material declared as excess.

There are both political and practical reasons why a full/complete declaration of all the past produced weapons grade material as a requirement of a Fissban would be problematic in the negotiations for the treaty as well as for its subsequent implementation. Experiences in declaring past production of weapons-grade Pu have shown that no account could be given of several hundred kilograms of Pu - enough to manufacture several hundred nuclear weapons. Declaration of nuclear material in weapons or directly associated with nuclear weapons without the ability to verify the declaration which will be made will also not contribute to confidence building.

While ceasing the production of nuclear weapons fissile material could lead to a quantitative capping of the number of weapons in existence and lay the foundation for their eventual elimination, nuclear-weapon reductions can only be irreversible if a Fissban makes the process irreversible by prohibiting the (re)use of fissile material which has been transferred from military use to civilian nuclear activities (declared as excess).

With the Cold War ended, the United States and Russia have declared roughly a third of their combined military stocks of HEU and plutonium excess for military purposes.

HEU stocks: As of mid-2006, the global stockpiles of HEU totaled roughly 1400 tons plus about 325 tons of excess weapons uranium that is to be blended down to LEU. More than 99 percent of this material is in the possession of the NWS, mostly in the U.S. and Russia.

Russia has declared 500 tons of its HEU excess. It started blending the HEU down to 4-5% U-235 and sold it to the United States for use as power-reactor fuel. As of mid-2006, 275 tons had been blended down – the equivalent to about 11,000 nuclear warheads. Similarly, the United States in 1994 declared 174 tons of its weapons HEU excess (later to 178 tons) and began to blend down most of it to LEU for use in U.S. power reactor fuel. By the end of 2005, about 60 tons had been blended down. In late 2005, the U.S. declared an additional 200 tons of HEU excess for weapons purposes.

However, only 20 tons of this material will be blended down to LEU. Of the remainder, 160 tons of weapon-grade uranium will be reserved for U.S. and U.K. naval-reactor fuel and 20 tons for space reactors and research reactors. Assuming that Russia has similarly reserved the equivalent of 100 tons of weapon-grade uranium for future naval-reactor use, this leaves 400-1000 tons of HEU in Russia's weapons stockpile and 310 tons in the U.S. weapons stockpile. Conservatively estimated, the U.S. and Russia have declared as excess between roughly 700 and 1000 tons of weapons grade material or the equivalent of additional 25,000 – 30,000 warheads.

Separated plutonium stocks: By the end of 2004, the global stockpile of separated plutonium was about 500 tons. This was divided approximately equally between weapons and civilian stocks. Virtually all the weapons plutonium is owned by the United States and Russia. But the United Kingdom, France, Germany, and Japan, along with Russia, also own substantial quantities of separated civilian plutonium. Of the NWS outside the NPT, India's stock includes both civilian and military, while North Korean, Pakistani, and Israeli stocks are military only.

About 100 tons of U.S., Russian, and U.K. weapons plutonium has been declared excess, but none of this has yet been disposed. In 2000, the United States and Russia agreed to each dispose of, in parallel and irreversibly, 34 metric tons of their excess weapons plutonium. But there has been little progress so far. At 4 kg Pu per warhead, the combined excess stockpile in these two countries alone would be comparable to more than 25,000 warheads.

The combined military stocks of HEU and plutonium excess for military purposes could be used to produce more than 50,000 warheads. Added to the approximate 27,000 operational warheads in the arsenal of 8 or 9 states, the potential number of warheads is reminiscent of that during the height of the Cold War.

Verification military fissile material declared excess: Currently only some 3% of global HEU stocks are under IAEA-safeguards raising fears over the potential use of these stocks in nuclear weapons, and access to these stocks by non-state actors and or terrorist groups. Roughly a half of the global stock of Pu is presumably under IAEA-Safeguards in NNWS. In light of fears that terrorist groups could potentially gain access to weapons grade fissile materials in the civilian sector, increased emphasis is being placed on the proliferation and security threats presented by these materials, in particular HEU. However, the large quantities of excess military stockpiles in states with nuclear weapons are equally vulnerable and should thus be of equal concern

The United States and Russia have already agreed in principle to work out verification arrangements for the plutonium and HEU that they have declared irreversibly excess to weapons. The blending down of most excess Russian and U.S. weapon uranium is already being verified. But much of the fissile material that Russia and the United States have declared excess will remain in weapons components for decades. In addition, since Russia considers the exact isotopic make up of its weapon-grade plutonium classified, that material will not be accessible to international inspectors as civilian plutonium until after it is blended with civilian plutonium to produce an unclassified mix.

It is for this reason that a fissile ban treaty should as a matter of priority include at the minimum military fissile material declared as excess. Only then will a Fissban serve as both a nonproliferation and disarmament mechanism.

A FISSBAN & WEAPON MATERIAL DECLARED EXCESS: RECIPE FOR A “GRAND BARGAIN”?

The 1993 U.N. General Assembly resolution that called for a FissBan does not address the production of fissile materials for internationally monitored civilian use. Nor does it specifically refer to fissile material stocks acquired before the treaty comes into force. Most of the NWS states support the latter exclusion. The draft FMCT tabled by the United States at the CD in May 2006 explicitly leaves the use of previously-produced fissile material unconstrained, and even allows non-weapon-grade to be converted to weapon grade material:

“The term ‘produce fissile material’ does not include activities involving fissile material produced prior to entry into force of the Treaty, provided that such activities do not increase the total quantity of plutonium, uranium-233, or uranium-235 in such fissile material.”

Many NNWS have strongly argued, however, that the use of pre-existing stocks of fissile materials should be constrained. They use as basis for this argument the fact that the 1995

Shannon mandate explicitly does “not preclude any delegation from raising for consideration...past production [or] the management of such material.” These states continue to argue that previously-produced fissile materials in civilian use and weapons materials already declared excess should be placed irreversibly under international safeguards and that the weapons states should be encouraged to declare more of their weapon stocks as excess. Convincing these states about the need to universally apply additional nonproliferation initiatives focused on fissile material in the civilian sector, would require simultaneous initiatives to negotiate an internationally verifiable fissile material treaty that covers both future production and military fissile material declared excess.

Such a FissBan would most likely distinguish between:

i. Fissile materials in nuclear warheads and their production and recycle pipeline

While NPT weapon states have a legal commitment under Article VI of the NPT to reduce stocks of fissile materials in the warhead cycle, they are likely to resist committing to a time frame for such reductions. Nuclear-armed states could, however, commit to declare the total quantities of fissile material they have for military purposes. The United States has already done this in the case of plutonium and the United Kingdom has declared its total stock of weapon plutonium and its stockpile of HEU for use in weapons and naval reactors. It is unlikely that these declarations will be verified, except with time as disarmament continues. But with surplus materials and independent estimates of their stockpiles published, countries would have a strong motivation not to greatly misrepresent their stocks.

ii. Fissile material declared excess but not yet in the civilian fuel cycle

Much excess fissile material has not yet entered the civilian fuel cycle, and is not yet subject to international monitoring. To meet the expectation that a Fissban should address both disarmament and nonproliferation objectives, fissile materials declared excess for military purposes should remain irreversibly so and be placed under international safeguards as soon as possible.

Excess material could be included in a starting inventory of a State upon entry into force of the treaty (without an obligation to declare its "completeness and correctness" from a production point of view) and would be subject to the verification machinery provided for in the treaty. Further material declared as excess in the future would continuously be added to the starting inventory in an irreversible way. If the material is in classified form (e.g., in a weapons component) there could be an obligation to convert it to unclassified form as quickly as possible. In the interim, some non-intrusive way of monitoring the components might be implemented. The 1996 Russian, U.S. and IAEA “Trilateral Initiative” which would allow IAEA inspectors to verify some unclassified attributes of stored weapons components and materials, could be expanded and implemented to verify excess stocks.

iii. HEU in naval-reactor fuel cycles

The continued use of weapons grade material in naval-reactor fuel cycles will require special consideration. While the NPT does not prohibit the removal of HEU from IAEA safeguards for use for military reactor fuel, a Fissban treaty could include arrangements for interim international monitoring of HEU stockpiles committed to future naval-reactor use. In such cases, if the stocks were in the form of classified weapon components, there could once again be a commitment to convert them to an unclassified monitorable form as quickly as possible. The same arrangements applied to naval reactors could also be applied to the fuel for other military reactors such as tritium-production reactors.

iv. In civilian-reactor fuel cycles

Once in effect, a Fissban should subject newly produced fissile materials to international monitoring to prevent it from being diverted for weapons purposes. Thus, the nuclear-armed states would be obliged to put their fissile-material production under international monitoring, as is already the case for states that have joined the NPT as non-nuclear-weapon states. They would also need to submit fissile material already in civilian use to international monitoring. In that case, the monitoring of their civilian nuclear-energy sectors would not have to be any different from that in the non-weapon states – although, during a transition period, it might be less comprehensive.

CONCLUSION

Measured against both the original goals of the NPT and the post 9/11 security goals, further exemplified by UNSC resolution 1540, a fissile material ban treaty today will only be relevant if it aims to prevent the production, sale, use and transportation of weapons-usable nuclear material, and to close this path permanently to nuclear armaments, proliferation and terrorism.

Since there is currently little prospect that negotiations on a fissile material ban treaty will begin soon or, if negotiations began, that they would not be long and tortuous, an *ad hoc* step-by-step approach toward realizing the objective of an FMCT could be considered. Such interim steps could include the adoption of moratoria on the production of weapons grade fissile material by all NWS and de facto nuclear possessor; U.S, Russian, and U.K. weapons materials declared excess for military use could be put under IAEA safeguards, using procedures such as those worked out under the Trilateral Initiative – this could be expanded to other nuclear weapons states; and a group of experts from nuclear weapon states could form a study groups to, among other things, work out arrangements with the IAEA to verify that HEU committed for naval-reactor use is not being diverted to weapon use.

In view of the lapse of time since the Shannon mandate was agreed, it may be appropriate to investigate whether the original negotiating mandate should be revised. In so doing it would be useful to identify and analyze viable alternative options, including its scope and effective ways to verify the implementation of the treaty in a non-discriminatory way. The growing risks of nuclear terrorism, and the potential threats posed by radiological weapons, raise an another important – albeit controversial – question: Would the world be better off with no production of separated plutonium or highly-enriched uranium – civilian and military - while progressively eliminating existing stockpiles?

Like a test ban, the only effective Fissban would be a comprehensive one---covering civilian as well as military activities – past and present. Obviously, the inevitable critics of a comprehensive Fissban would point out that such a treaty would be a "non- starter" and would allow the best to become the enemy of the good. But just as the NPT, a partial Fissban treaty would be fundamentally flawed and could create more dangers than it would eliminate. In eliminating the threat posed by weapons usable fissile material worldwide, the international community is best to avoid "the good that is not good enough."
