

CANADA

WORKING PAPER

Elements of an Approach to Dealing With Stocks of Fissile Materials for Nuclear Weapons or Other Nuclear Explosive Devices

Canada continues to be of the view that an FMCT is an integral part of a comprehensive nuclear disarmament and nuclear non-proliferation program directed to the elimination of nuclear weapons and of any associated stockpiles of fissile material for that purpose. The value of an FMCT therefore increases if it is able to adequately address the question of existing stockpiles. In 1999, Canada presented Working Paper CD/1578, which explored an approach to the question of stocks of fissile material for nuclear weapons or other nuclear explosive devices. As a contribution to the CD's consideration of the FMCT issue, Canada has reviewed and updated this paper to account for developments over the past seven years and to ensure that the recommendations are relevant to the current international environment.

CD/1578 recognized the sensitivities surrounding the issue of stocks. We continue to be mindful of the fact that any likely FMCT would confer obligations primarily on those states currently possessing fissile material not under IAEA safeguards or other comparable verification arrangements. We are equally aware of the necessity to find a compromise between those states that consider existing stocks of fissile material for nuclear weapons or other nuclear explosive devices as appropriate for treatment by an FMCT and states that do not.

CD/1578 proposed consideration of the stocks issue in a process that would be separate but parallel to FMCT negotiations, on the assumption that the Shannon mandate would be the basis for the latter. A key development since 1999 is that the Shannon mandate for commencing FMCT negotiations no longer enjoys consensus in the CD. Should another formulation for FMCT negotiations ultimately command consensus within the CD, this approach of separate, parallel consideration of the stocks issue may also require re-examination.

Canada's approach in CD/1578 was to look at four categories of possible measures complimentary to an FMCT, and this approach is carried over in this working paper. The four categories are:

- a) increasing transparency
- b) declarations of excess fissile material
- c) placing excess fissile materials under verification
- d) disposition of excess fissile material

A. INCREASING TRANSPARENCY

Since CD/1578 was circulated, the four nuclear weapon states that had before that time announced unilateral moratoria on production of fissile material for use in nuclear weapons have indicated that they have maintained these moratoria. Some have presented detailed inventories of their separated plutonium and highly-enriched uranium (HEU) holdings. These are welcome developments and point the way for other states with stocks of fissile material not currently subject to IAEA safeguards or other comparable verification arrangements to do likewise.

It is assumed that the stocks held by the United States and by the Russian Federation remain considerably larger than the combined total of the rest of the world. This, however, obviously cannot be confirmed without the full disclosure of information indicated above. It would be logical for these two states, working together, to take the lead role in providing transparent information about their stocks. Such a cooperative effort would not only benefit treatment of this particular issue but could also be an important contribution to wider non-proliferation and disarmament efforts, as well as an important confidence-building measure.

Among the other states possessing fissile material outside of verification, while their stocks are much smaller than those of the United States or the Russian Federation, they are still substantial. The UK has set an excellent example by providing historical accounting reports of its HEU and plutonium stocks. Other states in this category could benefit from a review of the UK documentation and prepare their own processes internally so that they are in a position to make such a declaration of their own (if they are not already capable of doing so). A further model for reporting could be INFCIRC/549, which is currently being used by states to declare stockpiles of civilian separated plutonium (and, in some cases, HEU). Such a mechanism could be expanded to cover all national stockpiles of separated plutonium and HEU, both civilian and military. As noted in CD/1578, it is important to lay the groundwork for such a declaration now, even if a declaration is not immediately forthcoming, lest time and personnel changes render difficult the process of reconstructing historical developments at a later stage.

Recommendations:

1. All states in possession of stocks of fissile material for use in nuclear weapons or other explosive devices should undertake to do the following, either unilaterally or in conjunction with others as a confidence-building measure:

- a) develop and publish a detailed list of their stocks (including type, quantity, etc.); and
- b) regularly update and publicize this information as an important transparency measure.

The United States and the Russian Federation, as the states with the largest such stocks, have a special responsibility to continue to work together in this regard.

2. States in this category not in a position to publish such information should nevertheless conduct a thorough audit of their stocks as a step towards developing such a mechanism, taking particular care to protect valuable historical information for future use.

B. DECLARATIONS OF EXCESS FISSILE MATERIAL

CD/1578 noted that as of 1999, the United States, the UK and the Russian Federation had made declarations that they possessed fissile material that is in excess of that identified for nuclear weapons or other nuclear explosive devices. Since that time, there has been one additional declaration by the United States in 2005 of an additional 200 tons of HEU as excess. There have been no other new declarations of excess fissile material, either by the UK or the Russian Federation, or by other states that possess stocks for use in nuclear weapons or other explosive devices.

It is furthermore uncertain whether any of these states, aside from the United States, have seriously evaluated the possibility of making any such (additional) declarations over the past seven years. Even if such a review concluded that there is no material which can be declared excess for the time being, there would be benefits to making this conclusion public, particularly if accompanied by confirmation that these states are maintaining only a credible minimum nuclear deterrent capability. Such a “no-excess” declaration would have the benefit of providing evidence that a) the state in question has carefully considered the matter, b) that a thorough count of the stock has taken place and appropriate records are being kept, and (c) no significant increase in its nuclear arsenal is contemplated.

Recommendation:

3. All states maintaining fissile material outside of appropriate verification should conduct careful analyses of their current stocks of fissile material, and publicize either the appropriate (additional) amounts of fissile materials to be in excess of that identified for nuclear weapons or other nuclear explosive devices, or that the review showed that there is no excess material at this time, and that there are no plans for significant increases in nuclear weapons inventories.

C. PLACING EXCESS FISSILE MATERIALS UNDER VERIFICATION

Declared excess material should be considered as civilian and thus subject to the application of IAEA safeguards. Such verification would be facilitated if, at the time of declaration, the locations/facilities where the excess material is located were to be also indicated. Any concerns regarding its verification should be limited since we are dealing solely with material already voluntarily declared as excess, meaning the amount of such material is publicly available information. Such concerns could be further reduced by ensuring that verification activities began only at the stage where the nuclear material is no longer of a quality or form useful for weapons purposes, e.g. during the down-blending stage.

Of the states that have declared excess fissile materials, the UK has indicated that all of its declared 4.4 tons of excess plutonium are under Euratom safeguards, while 10 tons of excess U.S. HEU and 2 tons of excess U.S. plutonium remain under IAEA monitoring. Russian excess material is not subject to formal safeguards but the blending-down of excess HEU is being done in conjunction with the United States.

Unfortunately the Trilateral Initiative, which had sought, inter alia, to provide for international verification of excess US and Russian plutonium while protecting classified details, has not been brought to fruition. Although a model agreement has been developed by the United States, the Russian Federation and the IAEA, including appropriate verification procedures, no fissile material has so far been provided pursuant to this arrangement. Nevertheless, the Trilateral Initiative not only represents a logical means of ensuring that Russian and U.S. declared excess fissile material did not return to weapons programs, but could also be used as a model for other states which declare excess fissile material.

As pointed out in CD/1578, the financial implications of the active verification of excess stacks must be evaluated.

Recommendations:

4. States which have declared excess fissile material should place this material under international verification if they have not already done so.
5. Negotiations on the model Trilateral Initiative agreement should be completed, and agreements between the United States, the Russian Federation and the IAEA concluded. The Trilateral Initiative model agreement should also serve as a model for other states declaring excess fissile material.

D. DISPOSITION OF EXCESS FISSILE MATERIAL

Fissile material declared as excess must then be disposed of in a manner that will make it unfeasible to reuse in nuclear weapons or other nuclear explosive devices. Since 1999, experience has shown

that disposition of HEU and disposition of plutonium present different levels of challenge. While results to date have shown much faster progress in HEU disposal, recent developments associated with new nuclear fuel cycle initiatives show promise for increased opportunities for plutonium disposition.

In both the United States and the Russian Federation, HEU disposition is proceeding apace, primarily via blending down the excess HEU into low-enriched uranium to be used in civilian reactors. As of end-2005, the Russian Federation had reportedly blended down approximately 269 of the 500 tons declared excess in 1993, while the United States has done the same for approximately 60 of the total 174 tons declared excess prior to 2005 (i.e. not including the most recent declaration). Approximately 20 tons of that earlier amount the United States declared excess however is not suitable for this method of disposition. The final disposition of the 200 tons of the most recent U.S. declaration in 2005 has not been confirmed, but it is understood that at least 20 tons are planned for blending down for civilian use; the remaining 180 are slated for use as naval and other reactor fuel. The role of commercial industry in the down-blending and marketing of this material has provided an additional confidence-building benefit by necessitating increased openness and transparency.

Plutonium disposition has proven more complicated, and thus has been slower to realize. In a bilateral agreement made in September 2000, both the United States and the Russian Federation agreed to dispose of 34 tons of weapons-grade plutonium. The Russian Federation and the United States have also agreed to convert some of their excess plutonium stocks through conversion to oxide form and mixing with uranium oxide, thereby fabricating mixed-oxide (MOX) fuel for use in reactors. However, construction of the facilities required for actual conversion has not begun, despite the welcome commitment of the states participating in the Global Partnership Programme to support the disposition of excess plutonium in the Russian Federation. There has been no indication of the disposition of the material declared excess by the UK.

Recommendations:

6. States with declared excess stocks of fissile material should commit to the active and early disposition of such stocks, and their safe storage until that time, preferably in forms less suitable for nuclear weapons.
 7. HEU disposition programmes should be accelerated to blend down excess HEU by the earliest possible date.
 8. The implementation of the United States-Russian Federation Plutonium Disposition Agreement, with the assistance of the other G8 states, should begin immediately.
 9. Development of new technical solutions to the problem of disposing excess plutonium should continue in the context of new nuclear fuel cycle initiatives.
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