

## AUSTRALIA

### WORKING PAPER

## SUGGESTIONS FOR PROGRESSING THE FISSILE MATERIAL CUT-OFF TREATY

### Introduction

1. A Fissile Material Cut-off Treaty (FMCT) has the potential to deliver substantial international security benefits, furthering the twin goals of nuclear disarmament and nuclear non-proliferation. By capping the amount of fissile material available for weapons use an FMCT would be an essential step towards irreversible nuclear disarmament. A cut-off treaty would also further tighten controls on fissile material, reducing the risk of it being diverted to proliferators or to terrorists. An FMCT would complement the CTBT which impedes development of nuclear weapons by proscribing testing.
2. The first objective is to start, without preconditions, negotiation of an FMCT containing the commitment to end production of fissile material for nuclear weapons. In order for the FMCT to be credible and effective there should be appropriate measures to verify that FMCT parties are complying with their obligations – but the negotiation of such measures can be conducted separately from the acceptance of the basic political commitments of an FMCT.

### Treaty Architecture

3. In the area of multilateral non-proliferation and arms control treaties, two basic precedents are relevant. One is for a single treaty containing both the basic treaty objectives and commitments and the details of the verification system – the approach taken with the Chemical Weapons Convention (CWC). The disadvantages of this approach include the time required to negotiate the treaty – a major concern in the case of the FMCT – and the degree of inflexibility with any future adjustments to verification arrangements.

4. The alternative approach – demonstrated very successfully by the NPT – is to have the basic political commitments in a principal treaty, and to set out the verification system in a secondary agreement (or series of agreements – in the NPT’s case each party concludes a safeguards agreement with the IAEA based on the model in IAEA document INFCIRC/153).

5. Applying the NPT model for the FMCT could allow rapid negotiation of the treaty containing the political commitment to end production of fissile material for nuclear weapons, with verification measures to be the subject of a subsequent, largely technical, negotiation. This would allow early establishment of a norm against the production of fissile material for nuclear weapons.

### **Objectives and Scope of the FMCT**

6. If, as discussed above, an FMCT were to follow the example of the NPT, the basic commitments and essential elements of such a treaty might be as follows:

- (i) A commitment by each party not to produce fissile material for nuclear weapons or other nuclear explosive devices;
- (ii) Definitions relevant to the scope of the treaty, including the fissile materials that are the subject of the FMCT commitments, and a definition of “production” – see discussion below). The definitions might also clarify non-proscribed activities;
- (iii) An entry-into-force formula that establishes the date from which the commitment not to produce fissile material for nuclear weapons or explosive devices applies;
- (iv) Provisions on the status of pre-existing stocks of fissile material – see discussion below;
- (v) A commitment to negotiation of appropriate verification arrangements;
- (vi) A mechanism for State Parties to review the operation of the FMCT at regular intervals;
- (vii) An amendment mechanism;
- (viii) A mechanism for State Parties to bring to the attention of all other State Parties issues of concern in relation to the operation of the treaty – either in general or in the case of suspected non-compliance with FMCT commitments.

## **Fissile material**

7. The fissile materials to be covered by the treaty should be those relevant to the manufacture of nuclear weapons. Broadly speaking these are high enriched uranium (HEU) and plutonium. The materials regarded by the IAEA for safeguards purposes as “direct-use materials” – nuclear material that could be used for the manufacture of nuclear explosive devices without transmutation or further enrichment - are as follows:

- (i) HEU is uranium enriched to 20% or more in the isotope U-235;
- (ii) plutonium containing less than 80% of the isotope Pu-238;
- (iii) also included is U-233.

8. These would seem an appropriate basis for definitions in the FMCT, with the following qualification. Plutonium in irradiated fuel should not be included because it cannot be used for nuclear explosive devices without first being separated from uranium, fission products and other materials by reprocessing. Plutonium defined as fissile material for the purposes of the treaty would be separated plutonium.

## **Production**

9. Production of fissile material, as defined above, requires three processes:

- (i) for HEU, uranium enrichment;
- (ii) for plutonium, uranium irradiation in a reactor and separation by reprocessing.

10. Plutonium “production” should not encompass irradiation, but only reprocessing. For the treaty to encompass irradiation would be to give it an extremely broad scope – essentially, applying to all reactor operations. As noted above, plutonium produced in reactor fuel is only available for weapons use if it is separated through reprocessing. This is relevant to the issue of “stocks”.

## **Stocks**

11. There has been some debate about whether an FMCT should apply to pre-existing stocks. However, it seems clear that the only FMCT which might be achievable at this time is one that deals primarily with future production. As discussed above, such a treaty would be of real value to non-proliferation and disarmament. Cessation of the production of fissile material for nuclear weapons is an essential reinforcing step towards the achievement of a nuclear weapon free world. An FMCT banning the production of fissile material for new weapons would be a barrier to recommencement of the nuclear arms race, buttressing nuclear disarmament gains to date. For the nuclear weapon states and “nuclear capable” states outside the NPT, an FMCT would establish a norm against the production of fissile material for nuclear weapons.

12. On this basis – with one important qualification - the treaty would need to clarify that it does not apply to fissile material pre-dating entry-into-force. The qualification is as follows: if the definition of production of fissile material means, in the case of plutonium, reprocessing as discussed above, then the exemption from the treaty of pre-existing stocks could apply, in the case of plutonium, only to plutonium that has already been separated at entry into force. Any new reprocessing activity, even if using pre-existing irradiated material, would be subject to the treaty.

### **Non-proscribed activities**

13. The treaty would not proscribe production of fissile material per se, only production for nuclear weapons or nuclear explosives. Reprocessing for civil use would not be proscribed. Nor would production of HEU for civil use (which it is expected would be limited) or for non-explosive military use (e.g. naval propulsion).

### **Verification aspects**

14. As outlined above, an FMCT should include a commitment to negotiate appropriate verification arrangements, but the details of these could be left for subsequent technical negotiations.

15. NNWS party to the NPT have an existing commitment not to produce fissile material for weapons purposes and to accept IAEA safeguards to verify this commitment. This subsumes FMCT goals, and in principle no separate verification system should be needed to verify NNWS commitments under the FMCT, provided the states concerned have in force a comprehensive safeguards agreement (INFCIRC/153) and an Additional Protocol (INFCIRC/540).

16. The principal effect of the FMCT – and its verification task – therefore relates mainly to the NWS and the three nuclear capable states outside the NPT. While the verification negotiation could be left largely to these states, as the most affected, the international community as a whole has an interest in ensuring that what is established has the necessary degree of integrity and effectiveness. In addition to appropriate generic verification arrangements, an important part of the verification architecture may well be bilateral or regional transparency and confidence building arrangements between these and perhaps other states.

17. Whether a particular verification regime provides the degree of assurance required by the parties – hence can be considered “effective” – is a matter for judgment, based on many factors: the verification objectives; the verification methods and standards; related CBMs; other information (including intelligence) available to the parties; incentives/deterrents reinforcing compliance; and so on. Only when the objectives and main features of the FMCT have been defined will it be possible to design the verification system and to judge whether it will be sufficiently effective to achieve the goals of particular parties and the international community more generally.

## **Conclusions**

18. It is imperative to start, without preconditions, negotiation of the FMCT, so the commitment to end production of fissile material for nuclear weapons can be achieved without further delay. Early commencement of negotiations is achievable if the various parties are realistic about what can and cannot be agreed. A fundamental issue is verification. Insistence on a detailed verification regime as part of the basic treaty would lead to further delays and is likely to result in failure to achieve any treaty. Further, the political forum in which the basic treaty will be negotiated is not the right place for development of a highly technical regime. To achieve progress we must be prepared to proceed in a stepwise fashion, securing the principal treaty first, then focusing on the verification arrangements that can give strength to the objectives of this treaty.

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