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## Verification Arrangements for the Proposed Fissile Material Cut-off Treaty

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Since the mid-1950's, an agreement to terminate the production of fissile material for nuclear weapons has been on the agenda. On December 16, 1993, the UNGA adopted Resolution A/RES/48/75/L which recommends "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 and other nuclear explosive devices".

The proposed Fissile Material Cut-off Treaty (FMCT) is still one of the most important items on the multilateral disarmament and non-proliferation agenda. Successful achievement of the FMCT would be an important step towards the goal of eliminating nuclear weapons.

Credible verification, to provide assurance that all the participants are honouring treaty commitments, will be fundamental to the establishment and successful implementation of the FMCT regime. This paper discusses some of the major issues concerning the prospective FMCT verification regime, with respect to both declared and possible undeclared nuclear material and activities.

While the prospects for the FMCT appeared to improve between 1993 and 1995, efforts to commence negotiations in the Conference on Disarmament have not been successful so far. The principal blocking issue is whether the FMCT should be bound to negotiations on nuclear disarmament, and whether to include existing stockpiles of fissile material in the scope of the negotiation.

Differences have arisen amongst experts over what should be the ultimate aim of an FMCT, and how it fits into the broader arms control, disarmament and non-proliferation process. Debate goes on about what specific materials and activities an FMCT should address. In terms of what an FMCT should cover, opinions span a wide spectrum, from a treaty of narrow scope, which would be limited to future production of weapons-grade material and associated facilities, to a regime similar to comprehensive safeguards. There is also an ambiguity over which specific materials fall into the category of weapons-grade or weapons-useable material.

In this paper we discuss factors which would affect the scope of verification under FMCT and associated resource requirements: categories of nuclear material to be subject to verification, types of nuclear facilities to be covered by verification activities, starting point of verification, detection goals, associated verification approaches, point of termination of verification.

On the basis of this discussion we canvass a practical "focussed approach" to verification under the FMCT. Taking our focused approach to verification of the FMCT as the point of

departure, this paper discusses the purpose and scope of verification activities at specific types of nuclear fuel cycle facilities. The discussion covers fissile material production facilities (enrichment and reprocessing plants), associated R&D facilities, and downstream nuclear fuel cycle facilities that may handle fissile material produced after entry-into-force of the FMCT.

This paper discusses basic verification aspects of the FMCT including *inter alia* routine and non-routine verification activities, managed access, and challenge inspection mechanisms. The paper also discusses the relationship between FMCT verification and IAEA safeguards.

Effective and cost-efficient verification, to provide credible assurance that States are honouring their treaty commitments, will be fundamental to the establishment and successful implementation of the proposed FMCT regime. Although there are very close parallels between IAEA safeguards and the verification regime required for FMCT, the latter would not be identical to comprehensive safeguards. First, the objectives of the two verification regimes, seemingly very similar, are not identical. Second, the cost of verification on the comprehensive model in the Nuclear Weapon States and other States with substantial unsafeguarded nuclear programs would be prohibitive. Further, FMCT is likely to require additional confidence-building measures, such as challenge inspections. Another major factor will be the concern to protect national security-sensitive information.

Measures to detect possible undeclared production of fissile material after entry-into-force will be an essential part of the regime. An essential part of these measures will be an on-site inspection mechanism, along the lines of special inspections on the safeguards model but possibly also including State-initiated challenge inspections. Assurance of the absence of undeclared fissile material production, however, cannot be left to those NWS with the most capable national intelligence activities. Nor should there be sole reliance on confrontational mechanisms such as special or challenge inspections. Hence there is a need for ongoing verification activities undertaken by an effective verification agency.

The verification agency should be given authority for acquisition and analysis of information, use of commercial satellite imagery, environmental monitoring, and complementary access along the lines of the Additional Protocol - subject to appropriate managed access requirements.

The verification agency would have to find the most effective and cost-efficient combination of available verification means. It should exercise flexibility in selecting the approach to specific States, locations and types of possible clandestine activities. Doing this, it should make full use of experience from the implementation of strengthened and integrated safeguards.

This paper reflects the views of the authors and does not necessarily represent Australian Government policy.