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# **Fissile Material (Cut-off) Treaty: Elements of the Emerging Consensus**

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# **Fissile Material (Cut-off) Treaty: Elements of the Emerging Consensus**

## **Introduction**

A treaty that would ban production of fissile materials for nuclear weapons has been on the agenda of the international community for more than 20 years. In 1995, a report to the Conference on Disarmament, prepared by Ambassador Shannon, included an agreed mandate for future negotiations. The report emphasized that the agreement on the mandate included an understanding that the negotiations could consider any relevant issue related to the scope of the treaty.<sup>1</sup> The Shannon report and the mandate it contained became an important starting point for efforts to achieve a ban on the production of fissile materials for weapons.

Discussions on the parameters of the future treaty and its importance for nuclear disarmament and non-proliferation have continued over the years, even as the negotiations in the Conference on Disarmament have failed to commence. The treaty still has the strong support of the international community and is widely considered a vital element of the future international security architecture.

In the past few years, efforts to begin the negotiations have intensified. In 2013, the United Nations General Assembly adopted a resolution that established a Group of Governmental Experts (GGE), which was requested to make recommendations on the future treaty.<sup>2</sup> The GGE, which held its working sessions in 2014-2015, became the first multinational forum to discuss the treaty at the level of governmental experts. In May 2015, the GGE issued a report that summarized the results of the discussions and contained recommendations for future work.<sup>3</sup>

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1 *Report of Ambassador Gerald E. Shannon of Canada on Consultations on the Most Appropriate Arrangement to Negotiate a Treaty Banning the Production of Fissile Material for Nuclear Weapons or Other Nuclear Explosive Devices*, CD/1299, 24 March 1995.

2 *Treaty Banning the Production of Fissile Material for Nuclear Weapons or Other Nuclear Explosive Devices*, A/RES/67/53, 4 January 2013.

3 *Report of the Group of Governmental Experts to Make Recommendations on Possible Aspects That Could Contribute to but Not Negotiate a Treaty Banning the Production of Fissile Material for Nuclear Weapons or Other Nuclear Explosive Devices*, A/70/81, 7 May 2015.

In another important development, shortly after the conclusion of the work of the GGE, the Government of France submitted to the Conference on Disarmament its draft of the treaty.<sup>4</sup> It became the first State-sponsored draft of an internationally verifiable treaty that was consistent with the mandate contained in the Shannon report.<sup>5</sup> Another draft of the treaty based on the Shannon report, prepared by the International Panel on Fissile Materials, was introduced in the Conference on Disarmament in 2009.<sup>6</sup> Members of the Conference on Disarmament also sponsored several meetings on various aspects of the treaty.<sup>7</sup> In preparation for the work of the GGE, a number of States submitted their views on the key elements of the treaty.<sup>8</sup> There is also a large amount of academic work devoted to technical and political issues associated with the ban on fissile material production.<sup>9</sup>

Discussions concerning the treaty, including those in the GGE, have demonstrated that there are significant differences regarding its objectives, scope and the role that the treaty should play in efforts to strengthen international security. At the same time, the discussions have reached a broad agreement on a number of the elements of the future treaty. Although the participants still hold different views on some of the key issues, such as the definition of fissile material or the scope of the treaty, there appears to be a convergence of views on the meaning of the treaty obligations, of the general structure of the treaty, and of the basic characteristics of the verification system that the treaty will create.

This paper presents the elements of this emerging consensus in order to stimulate further productive discussion of the treaty. It focuses on the points of agreement to illustrate that a number of important issues have already been effectively resolved. Moreover, this approach helps to emphasize the remaining differences and to make clear the nature of the compromises that would be required to successfully negotiate a viable treaty.

This analysis deals with those elements of the treaty that have a more technical nature – fissile material production, a verification system and the issue of existing stocks. Several important points, such as the structure of the treaty implementing organization, the enforcement mechanism and the question of entry into force, are not considered. It should be noted, however, that there is agreement on many of those issues as well.

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4 “Projet français de Traité interdisant la production de matières fissiles pour les armes nucléaires ou d’autres dispositifs explosifs nucléaires (FMCT)”, 9 April 2015, [http://www.delegfrance-cd-geneve.org/IMG/pdf/2015-04-09\\_projet\\_traite\\_fmct\\_version\\_finale\\_fra.pdf](http://www.delegfrance-cd-geneve.org/IMG/pdf/2015-04-09_projet_traite_fmct_version_finale_fra.pdf); “Draft Treaty Banning the Production of Fissile Material for Nuclear Weapons or Other Nuclear Explosive Devices Submitted by France”, 9 April 2015, [http://www.delegfrance-cd-geneve.org/IMG/pdf/2015-04-09\\_projet\\_traite\\_fmct\\_version\\_finale\\_eng.pdf](http://www.delegfrance-cd-geneve.org/IMG/pdf/2015-04-09_projet_traite_fmct_version_finale_eng.pdf).

5 In 2006, the United States submitted a proposal for a different negotiating mandate and a draft treaty that did not contain provisions for international verification. Stephen G. Rademaker, “Rising to the Challenge of Effective Multilateralism”, US Department of State, 18 May 2006, <http://2001-2009.state.gov/t/isn/rls/rm/66419.htm>; US Department of State, “Texts of the Draft Mandate for Negotiations and the Draft Treaty”, 18 May 2006, <http://2001-2009.state.gov/t/isn/rls/other/66902.htm>.

6 *Draft for Discussion Prepared by the International Panel on Fissile Materials*, CD/1878, 15 December 2009, <http://fissilematerials.org/library/G1060052.pdf>; International Panel on Fissile Materials, *Global Fissile Material Report 2008: Scope and Verification of a Fissile Material (Cutoff) Treaty*, October 2008, <http://ipfmlibrary.org/gfmr08.pdf>.

7 See, for example, Conference on Disarmament, “Australia–Japan Experts Side Event on FMCT Definitions, Palais des Nations, Geneva, 14–16 February 2011. Report of the Chair, Ambassador Peter Woolcott of Australia”, CD/1906, 14 March 2011.

8 For example, United States, “Fissile Material Cutoff Treaty: Views of the United States of America, pursuant to UNGAR 67/53 (2012)”, 2012, [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/BD142DD9E3BA954BC1257B7C00321B78/\\$file/USA.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/BD142DD9E3BA954BC1257B7C00321B78/$file/USA.pdf).

9 For a recent comprehensive overview, see Annette Schaper, “A Treaty on Fissile Material: Just Cutoff or More?”, PRIF, 2011.

## Central obligation of the treaty

The central provision of the future treaty is a ban on “production of fissile material for nuclear weapons or other nuclear explosive devices”.<sup>10</sup> In practice, however, production of fissile materials involves processes, technologies and facilities that are largely independent from the eventual destination of the material. While it is true that nuclear-weapon States operated dedicated facilities to produce materials for their weapon programmes, this was done primarily to increase efficiency of production rather than to employ processes that would be unique to weapon material production. For those fissile materials that are considered relevant for nuclear weapons, there is no fundamental difference between production of these materials for weapons or for some other purpose. This means that in order to translate the proposed ban on the production of fissile materials for weapons into enforceable and verifiable treaty obligations, the concept of a ban has to be expressed in a more detailed way.

First, there is a general agreement that the treaty would not prohibit all production of fissile materials, since most materials used in weapons have legitimate non-weapon uses (whether civilian or non-explosive military). This means that in order to fulfil its purpose, the treaty should require that all fissile material produced be submitted to verification. The verification system would have to be designed in a way that ensures that any material submitted to it is not used for weapons purposes.

Second, it is agreed that the treaty should prohibit production of fissile material that is not submitted to verification. In practice this would mean that the verification system should include measures to prevent undeclared or clandestine production of fissile material.

Finally, any material that is submitted to verification would be covered by treaty obligations up to the point when it is rendered unusable. Indeed, this principle, sometimes referred to as *irreversibility*, would be the core element of the treaty and create its most meaningful obligation.<sup>11</sup>

There is also general understanding that the treaty should prevent acquisition of fissile material from other sources, such as through transfers from another State or even from non-State groups. In order to do so, the treaty could close down these options by requiring that all acquisitions be treated like newly produced material. This approach, while not prohibiting all transfers, would prevent situations in which a State could circumvent the central obligation of the treaty by acquiring material from a source that is not treaty-accountable. This approach also enjoys broad support and is unlikely to be controversial.<sup>12</sup>

There is considerable support for a provision that would prohibit transfers of fissile materials to other States.<sup>13</sup> This obligation, however, would be redundant in most relevant cases. If the recipient country is a member of the treaty, any transferred material would have to be submitted to verification (as newly acquired material) even if it was not treaty-obligated

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<sup>10</sup> CD/1299, op. cit.

<sup>11</sup> A/70/81, para 11, op. cit. An explicit no-withdrawal provision in the treaty would help to distinguish its obligations from those accepted by nuclear-weapon States in their Voluntary Offer Agreements with the International Atomic Energy Agency (IAEA). The latter allow withdrawal of the material that was voluntarily submitted to IAEA safeguards. See International Panel on Fissile Materials, *Global Fissile Material Report 2007: Developing the Technical Basis for Policy Initiatives to Secure and Irreversibly Reduce Stocks of Nuclear Weapons and Fissile Materials*, 2007, Chapter 6, <http://ipfmlibrary.org/gfmr07.pdf>.

<sup>12</sup> *IPFM Report 2008*, Article I.2, op. cit.; A/70/81, para 6, op. cit.

<sup>13</sup> A/70/81, para 17, op. cit.

material in the country of origin. Transfers of treaty-obligated material to a country that is not a treaty party should be prevented by the verification arrangements, which would explicitly prohibit withdrawal of material that had been submitted for verification. The only situation in which a transfer may fall outside the scope of the treaty would be a transfer of non-treaty-obligated material—which would therefore not be covered by verification provisions—to a State that is not a treaty member. While the treaty may still call for a ban on transfers of this kind, it should be understood that this ban would be impossible to detect or verify unless the treaty were to extend its obligations to all categories of fissile materials (including, for example, the material in active nuclear weapons).

This interpretation of the central obligation of the treaty has been supported by most participants in the discussions on the FM(C)T. Corresponding provisions are included in all drafts that assume that the treaty will be internationally verifiable.<sup>14</sup> To summarize, a ban on production of fissile materials for nuclear weapons and other explosive devices is generally understood to mean the following:

All fissile material that is produced or acquired from any source should be submitted to verification, which is designed to ensure that this material is not used for nuclear weapons and that no production or acquisition of fissile material outside the established verification system is taking place.

## **Verification system**

The agreed interpretation of the central provision of the future treaty outlined above imposes certain requirements on the architecture of the verification system that would be required to support effective implementation of the treaty. The system would have to include at least three components, each having a distinct verification mission:

- verification at production facilities;
- downstream verification to ensure non-use of declared fissile material for weapons;
- detection of undeclared production facilities.

The first component of the verification system would include a set of measures implemented at production facilities either to ensure that they do not produce fissile materials or, if they do, that all produced material is properly declared and submitted to verification. The second component would follow the submitted fissile material “downstream” to ensure that it is not used in nuclear weapons or withdrawn for other purposes. These measures would include provisions that would allow non-proscribed military use of the material, which is discussed in a separate section.

Finally, the treaty would have to include arrangements to allow detection of covert fissile material production activity. Some of these measures would be an integral part of the routine monitoring activities at declared production facilities. However, it is important to emphasize that there is a widely shared understanding that the treaty should include other mechanisms, such as non-routine or challenge inspections, as well.<sup>15</sup>

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<sup>14</sup> Ibid., paras 43, 61; *Draft Treaty Submitted by France*, Articles 5.1(b), 5.1(c), op. cit.; *IPFM Report 2008*, Articles III.3.i(b), III.3.ii, op. cit.

<sup>15</sup> A/70/81, para 61, op. cit.; *Draft Treaty Submitted by France*, Article 5.1(c), op. cit.; *IPFM Report 2008*, Article III.3.i.b, op. cit.

## **Fissile material production and production facilities**

Specific arrangements that would have to be implemented at declared production facilities would depend on the agreed understanding of what constitutes production, what kind of facilities should be considered fissile material production facilities and which of them would have to be declared and submitted to routine verification.

Most existing treaty drafts include an explicit definition of fissile material production that includes uranium enrichment and chemical reprocessing that separates fissile materials from fission products or from unirradiated fuel.<sup>16</sup> Other processes, such as enrichment of plutonium in the Pu-239 isotope, are sometimes considered as well.<sup>17</sup> These definitions, however, assume an agreement on a specific meaning of the term “fissile material”, in this case unirradiated direct-use material. Other definitions of fissile material would require a different definition of production. For example, if the term fissile material were to include fissile isotopes in irradiated fuel, irradiation in a reactor would be categorized as production.

The treaty, in fact, may not need to identify specific technologies that can be used to produce fissile material. It can define production as any activity that produces new fissile material. Indeed, if understood this way, the definition of production would cover all possible activities and processes that are relevant from the point of view of the central provision of the treaty.

Once fissile material production is defined, a production facility can be defined as a facility that is capable of producing fissile materials. This definition also does not imply any specific production process.

Although the treaty may eventually include a detailed definition of production and production facilities, this would not affect the structure of the treaty and the basic principles of the verification system.

## **Verification at production facilities**

As discussed earlier, one of the central elements of the treaty is the verification system that would ensure that all material produced at production facilities is properly declared and accounted for. To comply with the treaty obligations, States would have to declare their production facilities and submit them to verification. The expert discussions have identified several categories of production facilities that may require a different verification approach.

First, there is a general understanding that small facilities may be exempt from verification.<sup>18</sup> This exemption could apply to laboratory-scale facilities, but it may cover larger facilities as well. The threshold is likely to be rather low, so that it does not create a verification gap in the treaty. It can be set to zero as well.

Further, this understanding assumes that all facilities that are capable of producing fissile materials and have capacity above the agreed threshold should be submitted to verification.

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16 A/70/81, para 38, op. cit; Draft Treaty Submitted by France, Article 2.2, op. cit.

17 *IPFM Report 2008*, Article II.2, op. cit; *US Draft Treaty, 2006*, Article II.2 op. cit.

18 A/70/81, para 41, op. cit.; *Draft Treaty Submitted by France*, Article 2.3, op. cit.

This would have to apply to those facilities that are not operating if they maintain the capability to produce fissile material.<sup>19</sup>

One category of facilities that is often discussed separately includes facilities that were producing fissile material for weapons in the past. Since almost all weapon States have used dedicated facilities for weapon material production, it has been suggested that the treaty should explicitly require that these facilities be disabled, decommissioned and dismantled or converted to civilian uses.<sup>20</sup> This is a reasonable demand that aims to ensure that no State has standby capacity to produce fissile materials for weapons. However, it is not clear if these facilities warrant a separate category. Whether they are decommissioned or converted to civilian uses, they would be covered by the general verification provisions that apply to all production facilities.

One issue that may deserve special consideration is whether States should declare those former production facilities that have been decommissioned or dismantled by the time the treaty enters into force.<sup>21</sup> This question may also be relevant for facilities that were producing fissile materials in the past, but were converted to activities that do not involve fissile material production. The treaty may require these facilities to be declared, although States with substantial past production are likely to object.

Finally, it is generally understood that verification measures applied at production facilities would probably have to be facility-specific, even if the general principles of verification and its objectives were to be applied universally. The level of verification activity would depend on the status of the facility (under construction, operating, shut down, or decommissioned) and on the specific production activity that is carried out at the facility.<sup>22</sup>

Taking into account these considerations, the way in which the issue of production facilities could be handled can be summarized as follows:

At the time of entry into force, each State party declares all its facilities that are capable of producing fissile materials. The declaration may include all facilities, including those with capacity below the agreed threshold. It may also include decommissioned and converted facilities that are no longer capable of producing fissile materials. Following the declaration, the implementing organization will determine the appropriate level of verification activity and specific measures to be applied at each facility on the list. Verification activities at small, converted or decommissioned facilities may be limited to periodic confirmation of their exempt status. Operational facilities or shut-down facilities that preserve the capability to produce fissile materials would be placed under appropriate continuous monitoring.

The verification measures to be implemented at each facility could be modelled after standard IAEA safeguards procedures, although they might be modified to take into account FM(C)T verification objectives, as well as the fact that the design of some of the older production facilities may complicate verification.<sup>23</sup> There is an agreement that States will

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<sup>19</sup> In the current IAEA safeguard practice, this would correspond to a facility that has been shut down or closed down, but that has not been decommissioned. International Atomic Energy Agency, *IAEA Safeguards Glossary*, 2002, para 5.29-5.31.

<sup>20</sup> *Draft Treaty Submitted by France*, Article 3.2, op. cit.; *IPFM Report 2008*, Articles I.4, III.3.i, op. cit.

<sup>21</sup> *Draft Treaty Submitted by France*, Article 5.4, op. cit.

<sup>22</sup> A/70/81, para 52, op. cit.

<sup>23</sup> *IPFM Report 2008*, Chapters 4-5, op. cit.



have the right to implement “managed access” to their facilities in order to protect sensitive information.<sup>24</sup>

## **Downstream verification**

The next key element of the FM(C)T required to enable the treaty to achieve its goal is the set of measures that would ensure that no fissile material that is submitted to verification can be used in nuclear weapons.<sup>25</sup> This verification system would have to follow the material from the point of origin throughout its entire life cycle. These arrangements are often referred to as “downstream verification”.

There is a firm understanding that any new material that is produced after entry into force would have to be submitted to downstream verification and that once submitted, the material could not be withdrawn. As discussed earlier, this is an integral part of the central obligation of the treaty. This understanding can be easily extended to any other acquisitions of fissile material, for example, through a transfer from another country or from a non-State entity. The downstream verification system would also be capable of handling material that originates from a pre-existing stock, whether civilian or military.

As for termination of verification, the agreement is that the verification measures could be lifted only when the material is no longer considered fissile material as defined in the treaty. This may be a result of consumption, irradiation or dilution of the material. The approach to termination of safeguards adopted by the IAEA can provide a useful model.<sup>26</sup> It is also reasonable to include a provision that would require any material that is transferred to another State to remain under verification.

Downstream verification of the material that is produced for civilian use should not present any challenges, as it can draw on the extensive experience of the IAEA safeguards and can employ similar practices and tools.<sup>27</sup> The FM(C)T verification system, however, would have to include a component that deals with fissile material produced for non-civilian uses. This would require a separate arrangement.

Since the FM(C)T objective is defined as a ban on production of fissile material for use in nuclear weapons and other explosive devices, it is usually understood that States would be allowed to produce fissile material for non-proscribed military purposes.<sup>28</sup> This may include, for example, production of highly enriched uranium (HEU) for naval reactors as well as for fuel used in military research or isotope production reactors. The procedures that would normally be used to verify non-weapon use of fissile material submitted to verification may not be applicable in this case, since the military applications are likely to require a certain degree of secrecy. In IAEA practice, the material that is intended for military non-explosive use may be withdrawn from safeguards.<sup>29</sup> Specific arrangements that would be implemented in this case have not been developed yet, since no State has exercised its right to withdraw material from IAEA safeguards in this way.

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24 A/70/81, para 53, op. cit.; *Draft Treaty Submitted by France*, Articles 5.8–5.10, op. cit.; *IPFM Report 2008*, Chapter 8, op. cit.

25 A/70/81, para 43, op. cit.; *Draft Treaty Submitted by France*, Article 5.1(b), op. cit.; *IPFM Report 2008*, Article III.3.ii, op. cit.

26 *IAEA Safeguards Glossary*, 2.12, op. cit.

27 A/70/81, para 59, op. cit.; *IPFM Report 2008*, Article III.2, op. cit.

28 A/70/81, paras 21, 54, op. cit.; *Draft Treaty Submitted by France*, Article 6.2, op. cit.; *IPFM Report 2008*, Articles III.2, III.3, op. cit.

29 *IAEA Safeguards Glossary*, 2.14, op. cit.

There are a number of ways the FM(C)T could implement provisions on handling material intended for use in non-proscribed military purposes. This could be done by having a separate protocol that would specify the verification arrangements in such cases. These arrangements could be applied universally to all States or could be negotiated on a State-by-State basis to account for different practices in using fissile materials in military applications. It is, however, agreed that the general principles of verification in this case should be the same as in the civilian domain in that they should exclude the possibility of diversion of the material to weapons.

## Undeclared production

The final key component of the verification system is a set of arrangements designed to detect undeclared production activities and facilities. Verification measures described in the preceding sections would apply only to declared production facilities and declared material. This leaves two main possibilities for producing unaccounted material that could then be made available for weapon purposes. One is *undeclared production at declared facilities* and the other is *production at undeclared facilities*.<sup>30</sup> A robust verification system should be able to close both these acquisition paths.<sup>31</sup>

The first option, undeclared production at a declared facility, can and should be addressed by the verification procedures that are implemented at that facility. The second would most likely require special arrangements that would include non-routine or challenge inspections, requests for complementary access and other similar measures.<sup>32</sup> Detection of signs of undeclared activity can be entrusted to the FM(C)T implementing organization, which would be able to rely on its own information as well as on information supplied by member States.<sup>33</sup> Some proposals suggest that the arrangements for detection of undeclared facilities could be modelled after the provisions of the Additional Protocol (INFCIRC/540), which includes such measures as wide-area environmental sampling and disclosure of detailed information about all stages of the nuclear fuel cycle.<sup>34</sup> It is likely, however, that a number of States will object to some of the most intrusive detection measures and may insist on less stringent provisions.

To summarize, there appears to be a strong agreement that the treaty will have to include provisions designed to detect undeclared production facilities, even though there are still significant differences over the specifics of these arrangements.

## Existing stocks

The question of whether the FM(C)T should address the fissile materials that were produced before entry into force is one of the most divisive issues in the discussions on the future treaty. It is nevertheless possible to outline an agreed approach that the treaty could adopt in dealing with existing stocks of fissile materials.

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<sup>30</sup> Another possibility is undeclared acquisition of material from a foreign party, for example, from a State that is not party to the FM(C)T or the Non-proliferation Treaty, which would be a prohibited transfer.

<sup>31</sup> A/70/81, para 49, op. cit.; *Draft Treaty Submitted by France*, Article 5.1(c), op. cit.; *IPFM Report 2008*, Article III.3.i.b, op. cit.

<sup>32</sup> A/70/81, para 61, op. cit.

<sup>33</sup> *Draft Treaty Submitted by France*, Article 8.1, op. cit.; *US Draft Treaty*, Article III.2, op. cit.

<sup>34</sup> International Atomic Energy Agency, *Model Protocol Additional to the Agreement (s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards*, INFCIRC/540 (Corrected), May 1997.

Most importantly, even if the treaty imposes no obligations on its parties regarding existing stocks, nothing in the treaty would prevent a State from submitting any amount of its fissile material produced before entry into force to verification under the treaty. This material can be treated as new production or acquisition and the verification arrangements would ensure that it is not used for proscribed purposes. If the material submitted to verification is of military origin, the State may want to protect sensitive information associated with it (such as isotopic content). This can be dealt with in a variety of ways, such as mixing it with non-military material to mask the sensitive information. If the material is submitted to verification on a voluntary basis, there would be no restriction on such manipulations.

The procedure would be significantly more complex if the treaty were to include an obligation to submit to verification a certain category or a specified amount of material from existing stocks. For example, the FM(C)T may include provisions that extend its coverage to all existing stocks of civilian material or to a specific amount of fissile material declared excess to military purposes. In this case, the procedure should include measures that would verify that all this material has indeed been submitted to verification.

These measures could be relatively easily implemented in those cases where the material in question is already under verification. This is the case for all fissile materials in Non-Proliferation Treaty (NPT) non-nuclear-weapon States and also for the material in weapon states that has been placed under IAEA or similar safeguards.<sup>35</sup> The material covered by bilateral verification arrangements could also be in this category.<sup>36</sup> Indeed, it has been suggested that this material should be considered treaty-obligated in the future treaty.<sup>37</sup>

The experience of the US-Russian bilateral process also demonstrates the possibility for more complex arrangements to allow elimination of a specified amount of material and confirm the weapon-origin of the material. Under the Plutonium Management and Disposition Agreement, the United States and the Russian Federation agreed to eliminate 34 tons of weapon-grade plutonium. The quantity of plutonium will be verified during the disposition process. Also, in a joint project, known as the Trilateral Initiative, the United States, the Russian Federation and the IAEA demonstrated the possibility of placing sensitive weapon-origin fissile material under IAEA safeguards. The results of this work strongly suggest that if necessary, the FM(C)T obligations could be extended to a wide range of categories of fissile materials produced before its entry into force.

It is important to emphasize that even though the treaty may not include any provisions related to pre-existing stocks, it will inevitably create a legal, technical and organizational structure that would be capable of accepting existing fissile materials. The downstream verification system that the treaty will establish to deal with new production will be capable of accepting past production as well. It will ensure that once the material is submitted to verification, it can no longer be used for weapons.

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<sup>35</sup> This would include some HEU and civilian plutonium in France and the United Kingdom that has been placed under Euratom safeguards as well as about 2 tons of US plutonium that is under IAEA safeguards. *Global Fissile Material Report 2007*, pp. 72-73. India, Israel, and Pakistan have some nuclear material under INFCIRC/66-type safeguards.

<sup>36</sup> This includes weapon-grade plutonium in Russia that is subject to monitoring by the United States. See "Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning Cooperation Regarding Plutonium Production Reactors", 23 September 1997, <http://ipfmlibrary.org/gov97.pdf>.

<sup>37</sup> *IPFM Report 2008*, Article I.5.i, op. cit.

## **Conclusion**

The points of agreement described above could provide a useful basis for further discussion of the treaty. They show that the discussions so far have already made significant progress. However, the remaining differences should not be underestimated. Indeed, the emerging consensus covers only the general structure of the treaty and some of its key elements. Depending on the choices made during negotiations, these elements could take many different forms. For example, the specifics of the verification system design will depend on the choice of the definition of fissile material that the treaty adopts. A downstream verification system that follows HEU only would be quite different from the one that follows all enriched uranium. Other aspects of the treaty, such as its verification objectives, should be taken into account as well.

It is also clear that more technical work will have to be done to further expand the range of options available to negotiators. It has already been demonstrated that the existing technologies can provide a solid foundation for an effectively verifiable treaty. Further work in this area would help in exploring additional ways to strengthen the treaty. The outline of the points of agreement may help provide direction to these efforts.

Finally, a closer look at the emerging consensus could help States to obtain a better understanding of disagreements and to examine compromises that would move the negotiations forward. The progress that has been made so far creates good conditions to do so.





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## **Fissile Material (Cut-off) Treaty: Elements of the Emerging Consensus**

This paper presents the elements of this emerging consensus in order to stimulate further productive discussion of the treaty. It focuses on the points of agreement to illustrate that a number of important issues have already been effectively resolved. Moreover, this approach helps to emphasize the remaining differences and to make clear the nature of the compromises that would be required to successfully negotiate a viable treaty.

This analysis deals with those elements of the treaty that have a more technical nature – fissile material production, a verification system and the issue of existing stocks. Several important points, such as the structure of the treaty implementing organization, the enforcement mechanism and the question of entry into force, are not considered. It should be noted, however, that there is agreement on many of those issues as well.