Elements of a Fissile Material Cut-off Treaty

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Recent developments

• 2017-2018: High Level Expert Preparatory Group

• 2015: Draft treaty submitted by France

• 2014-2015: Work of the Group of Governmental Experts
  • Views submitted by States
  • GGE deliberations and final report

• Earlier drafts (International Panel on Fissile Materials and others), expert discussions
Dynamic inter-relationship

• Definitions

• Verification

• Scope
# Definitions of fissile material

<table>
<thead>
<tr>
<th>Fissile material</th>
<th>Article XX of the IAEA Statute</th>
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<tbody>
<tr>
<td></td>
<td>All enriched uranium (including LEU)</td>
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<tr>
<td></td>
<td>All plutonium (separated or in spent fuel)</td>
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<tr>
<td>Unirradiated direct use material</td>
<td>Highly enriched uranium (&gt;20% U-235 or U-233)</td>
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<tr>
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<td>All separated plutonium</td>
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<tr>
<td>Weapon-grade material</td>
<td>Weapon-grade HEU (&gt;90% U-235)</td>
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<tr>
<td></td>
<td>Separated weapon-grade plutonium</td>
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<tr>
<td>Intermediate-grade material</td>
<td>Excludes naval HEU (up to ~60% U-235)</td>
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<td></td>
<td>Excludes reactor-grade plutonium</td>
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<tr>
<td>Other definitions</td>
<td>May include Np, Am</td>
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Ban on production of fissile material for weapons

- Fissile material that is produced (or acquired from any source) should be declared and submitted to verification

- Verification system is designed to ensure that
  - Submitted material is not used for nuclear weapons
  - Once submitted, material cannot be withdrawn
  - No material is produced that is not submitted to verification
Components of the verification system

• Verification at production facilities
  • All produced material is declared and submitted to verification

• Downstream verification
  • Fissile material is not withdrawn or diverted
  • Fissile material is not used for weapon purposes

• Detection of undeclared production
  • No covert production facilities
Production and production facilities

- Production is any activity or process that produces fissile materials
  - Specific definition depends on the definition of fissile material

- Production facility is any facility that is capable of producing fissile materials
  - “Capable of producing” vs. “configured to produce” or “licensed to produce”
Verification at production facilities

• Procedures would have to be facility-specific

• Initial declaration should include all “capable” facilities
  • Should the declaration include former production facilities?

• Implementing organization decides on specific verification measures
  • Some facilities may be exempt (laboratory-scale, converted, shut down, dismantled etc.)
Downstream verification

• Irreversibility
  • Once submitted, material cannot be withdrawn

• Material cannot be used for weapon purposes

• Non-proscribed military uses may require a special arrangement
  • Military naval reactors, military research reactors
  • Article 14 of the INFCIRC/153 may or may not be a good model

• Transfers to other states
Detection of undeclared production

• Undeclared production at declared production facilities
  • Should be prevented by facility-specific verification measures
  • May require “upstream” verification arrangements (similar to additional protocol)

• Production at undeclared facilities
  • May require non-routine inspections and other measures
Existing stocks

• FMCT would create a system for handling existing materials

• Any existing material can be submitted to verification
  • Material voluntarily declared excess
  • ”Disarmament material”
Conclusions

• There is a broad agreement on the key elements of the FCMT, even though differences remain

• FMCT can be an essential element of nuclear disarmament whether or not it mandates elimination of fissile materials