

Verifiable Declarations of Fissile Material Stocks

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FM(C)T and existing stocks

- Shannon report:
 - The mandate “does not preclude any delegation from raising ... any of the above noted issues” – i.e. past production or management of materials

- States’ view on FM(C)T (2013):
 - Mexico: “The treaty negotiations should be part of a broad and comprehensive nuclear disarmament and non-proliferation process”

 - Switzerland: “A treaty should ... address past production of fissile material”

 - Brazil: GGE should “explore ... a phased process of destruction of all pre-existing weapons-grade fissile material”

Potential roles of initial declarations

- Trust and confidence-building measure
- Measure of progress toward nuclear disarmament
- Baseline for treaty verification system
- Baseline to assess non-diversion of materials

Fissile material stocks

	HEU, tonnes	Non-civilian Pu, tonnes	Civilian Pu, tonnes
Russia	679	128	52.8
United States	599	87.6	0
France	30.6	6	61.9
China	18	1.8	0.025
United Kingdom	21.2	3.2	104.2
Pakistan	3.1	0.19	0
India	3.2	5.7	0.4
Israel	0.3	0.86	-
North Korea	0	0.03	-
Others	15	-	52.8
TOTAL	1370	234	272

Numbers for weapon plutonium for the United States and United Kingdom are based on official data. Most numbers for civilian plutonium are based on declarations submitted to IAEA and reflect the status as of December 31, 2014. Other numbers are non-governmental estimates, often with large uncertainties. HEU amount for Russia is 90% enriched HEU equivalent. The totals are rounded. See individual country entries for details.

Source: International Panel on Fissile Materials, fissilematerials.org

Status of declarations

	Military material	Civilian material
United States	Detailed account of plutonium and HEU production and inventories	Excess military plutonium reported as civilian
United Kingdom	Military HEU and plutonium inventory	Plutonium and HEU under Euratom safeguards
France	—	Plutonium and HEU under Euratom safeguards
Russia	—	Reactor-grade plutonium
China	—	Reactor-grade plutonium
India	—	Plutonium under IAEA safeguards

Voluntary unverified declarations

- Lack of common standard
- Errors and inaccuracies
- Potential for misunderstanding

Verification strategies

- What is “effectively verifiable”?
- Gradual approach
 - From simple declarations to gradual opening of records
- National technical means and independent analysis
- Fully verified declarations
 - Similar to the IAEA model

Verified declarations

- Physical inventory
- Production and material balance history

Verified declarations

- Physical inventory
 - Lack of access to materials in active use
 - Limited accuracy of measuring material content
 - Waste, bulk material
- Production and material balance history
 - Limited accuracy and availability of production records
 - Potential proliferation sensitivity
 - Some removals are unverifiable

Open and closed segments

Closed segment	Open segment
Quantity of material known and declared with high accuracy	Quantity of material declared, but may not be accurately known
Active and reserve warheads, material for maintenance	Civilian material, material in mixtures, waste, disposed material
No verification access	Open to verification
No production facilities	All production facilities
No material added, all removals are verified	Ban on production of materials for weapons is in force. All new material is subject to verification
All weapon-related activities	Civilian and non-proscribed military activities
Initial declaration verified when all material is removed	Gradually growing confidence in the absence of undeclared material

Deferred verification

