

from their elimination. Steps could be taken to disable nuclear warheads in the field prior to transporting them to storage and/or dismantling facilities. Monitoring such disablement would require inspection which could pose security problems. Maintaining accountability of excess nuclear warheads during the transportation, storage, and dismantlement process could be facilitated by the use of unique identifiers such as tags or serial numbers and tamper-proof seals.

Dismantlement of a nuclear weapon requires essentially the same expertise necessary to construct the weapon. In the United States, dismantlement is accomplished at the Pantex Plant in Amarillo, Texas; a similar facility is reported to exist in the Russian Federation. Monitoring the actual dismantling of nuclear weapons at such facilities without compromising sensitive nuclear weapons design information is the subject of separate, detailed studies beyond the scope of this paper. The fissionable materials from dismantled weapons could be stored at designated facilities monitored by the IAEA.

Future verification challenges may center around keeping retired nuclear missiles secure from terrorists and thieves, storing nuclear weapon parts and fissionable material safely and without environmental damage, and commercially cycling some nuclear materials without contributing to the spread of weapons. This last goal needs to be achieved in the near future because Russia will have more than 500 metric tons of highly enriched uranium (HEU) after dismantling its nuclear weapons. When blended with natural uranium, one pound of HEU would make about 27 pounds of so-called low-enriched nuclear power plant fuel, which could be used in some of the more than 330 nuclear power plants world-wide capable of using such fuel.

Cut-off in the Production of Fissionable Materials for Weapons Purposes

The United States has announced that it will not produce plutonium and highly enriched uranium, two key ingredients of nuclear

weapons which have been in abundant supply for years. Tritium, which is used to boost nuclear yields and has a short half-life, is not a fissionable material, and is not included in this announcement. The announcement of an indefinite halt to U.S. production of these fissionable materials is largely a symbolic gesture since the United States has not produced uranium for nuclear weapons since 1964 and ceased plutonium production in 1988. The halt to production does not forestall creation of new nuclear arms, because the materials last for thousands of years and have routinely been recycled from old weapons into new ones. Since the U.S. arsenal of nuclear weapons has been shrinking since the mid-1980s, and will shrink further in the period ahead under the provisions of START and the follow-on to START, there will be a substantial surplus of fissionable materials.

The U.S. pledge is primarily intended to put pressure on Russia, Israel, North Korea, and India, countries which make either one or both of the materials now or have done so in the past. Russia has previously said that it would agree to a bilateral halt in production. Last year Pakistan promised that it would make no more highly enriched uranium. American-Russian agreement could be the first step in seeking an international halt to the production of weapons-grade fissionable material and, in turn, a step toward the goal of stemming nuclear proliferation.

The U.S. decision to cut-off production was a unilateral step, rather than an element in a binding arms treaty, and therefore it could be reversed without the political penalties of withdrawing from a treaty. Reversal is unlikely in the current period, however, with the Congress moving toward enactment of limitations on U.S. nuclear testing that would constrain development of new weapons and dampen interest in production of more fissionable materials.

Future agreements related to a cut-off in the production of fissionable materials for weapons purposes will have to provide for the existence of these materials by providing means to store and dispose of them. Storage of materials is straightforward, but requires proper inventory,

