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EDITOR'S NOTE

The first three articles of this issue focus on highly-enriched uranium (HEU)—in particular on how to ensure that the HEU spread around the world in civilian research reactors or recovered from dismantled nuclear weapons (especially in Russia) could be eliminated or converted to safer forms. The task of doing so is especially compelling by virtue of the fact that HEU appears far more readily usable in a terrorist nuclear weapon than is plutonium, the other essential fissile material. HEU refers to uranium enriched to over 20% U-235; but much of the HEU considered in these articles is actually so-called weapon-grade, over 90% U-235.

The first of the three articles, by Frank von Hippel, focuses on nuclear fuel cycles using HEU, mainly those of civilian research reactors and critical assemblies, but also of icebreakers and naval propulsion reactors. The article argues that the most urgent tasks are to bring to secure storage the HEU, both in fresh and spent fuel at the research reactor sites, and to convert the reactors so that they could use in the future low-enriched uranium (LEU). The article sets out in considerable detail the challenges involved, including the technical problems of converting reactors from HEU to LEU, and the programs underway to facilitate such conversion.

The next two articles focus on the Russian HEU recovered from weapons. The article by James Timbie describes from his vantage point in the U.S. State Department the history and status today of the remarkable U.S.-Russian deal under which the U.S. has agreed to purchase 500 tons of Russian weapon-grade uranium recovered from dismantled warheads and then blended down to low-enriched uranium for fuel for light water reactors. The author traces the problems and successes of the agreement and how various threats to the agreement were handled.

The following article, by Oleg Bukharin, is an overview of the entire uranium enrichment complex of Russia, and the Appendix to the article describes in detail the HEU down-blending technology and transparency measures. The Timbe and Bukharin articles together provide a comprehensive overview of the uranium deal.

The final article, by Geoff Forden, analyzes the capabilities of China's new satellite-based navigation system—the so-called Beidu constellation. The author concludes that the system does not provide accuracies comparable to the

NAVSTAR/GPS system of the U.S., nor would it provide sufficient accuracy for most conventional military uses. He does believe that the system, with the addition of an atomic clock, could provide sufficient accuracy for some future—and so far, completely speculative—Chinese MIRVed ICBMs. Some Chinese analysts dispute this last interpretation; and we hope to have an article on their work in a future issue of the journal.

The issue concludes with a brief exchange between a critic and the authors of the article in vol. 12(2–3) on damages from a major release of Cs-137 into the atmosphere as a result of a fire in a spent reactor pool in the U.S.