

APR10-2009-020024

Abstract for an Invited Paper
for the APR10 Meeting of
the American Physical Society

In search of plutonium: A nonproliferation journey

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In February 1992, I landed in the formerly secret city of Sarov, the Russian Los Alamos, followed a few days later by a visit to Snezhinsk, their Livermore. The briefings we received of the Russian nuclear weapons program and tours of their plutonium, reactor, explosives, and laser facilities were mind boggling considering the Soviet Union was dissolved only two months earlier. This visit began a 17-year, 41 journey relationship with the Russian nuclear complex dedicated to working with them in partnership to protect and safeguard their weapons and fissile materials, while addressing the plight of their scientists and engineers. In the process, we solved a forty-year disagreement about the plutonium-gallium phase diagram and began a series of fundamental plutonium science workshops that are now in their tenth year. At the Yonbyon reprocessing facility in January 2004, my North Korean hosts had hoped to convince me that they have a nuclear deterrent. When I expressed skepticism, they asked if I wanted to see their “product.” I asked if they meant the plutonium; they replied, “Well, yes.” Thus, I wound up holding 200 grams of North Korean plutonium (in a sealed glass jar) to make sure it was heavy and warm. So began the first of my six journeys to North Korea to provide technical input to the continuing North Korean nuclear puzzle. In Trombay and Kalpakkam a few years later I visited the Indian nuclear research centers to try to understand how India’s ambitious plans for nuclear power expansion can be accomplished safely and securely. I will describe these and other attempts to deal with the nonproliferation legacy of the cold war and the new challenges ahead.