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September 13, 2016

Ms. Cheryl Moss Herman
U.S. Department of Energy
Office of Nuclear Energy
Mailstop B-409
19901 Germantown Rd.
Germantown, MD 20874-1290.

Re: Excess Uranium Management: Effects of DOE Transfers of Excess Uranium on Domestic Uranium Mining, Conversion, and Enrichment Industries; Request for Information

Dear Ms. Herman,

Thank you for this important opportunity to comment on the Department of Energy Office of Nuclear Energy request for information on effects of transfers of DOE enriched uranium.¹

Most advanced nuclear start up companies in the U.S. are proposing reactor designs that require uranium enriched above the 5% level available from U.S. vendors and European vendors. For a typical advanced reactor design like the UC Berkeley Mk1 PB-FHR, approximately one metric ton of excess highly enriched uranium (HEU), down blended to 19.75%, could produce 1 gigawatt-year of electrical power.

Because many U.S. advanced nuclear reactor developers require uranium enrichment above 5%, U.S. developers face a major cost barrier in procuring the initial, relatively small quantities of enriched uranium needed for commercial demonstration and early commercial deployment. Conversely, after the amounts of separate work being purchased become sufficiently large, U.S. and European enrichment vendors will then be willing to modify their licenses and offer separative work (SWU) at a moderate premium above conventional <5% SWU procurement.

A logical policy solution for the U.S. is to dedicate some of its existing HEU inventory to be down blended to 19.75% and held in a reserve for U.S. advanced nuclear vendors.

¹ <https://www.federalregister.gov/documents/2016/07/19/2016-17024/excess-uranium-management-effects-of-doe-transfers-of-excess-uranium-on-domestic-uranium-mining>

This uranium can then be made available to U.S. advanced nuclear vendors at a SWU price competitive with commercial SWU prices. Unless U.S. advanced nuclear vendors have access to this type of domestic enriched uranium, they will face a significant disadvantage in competing with vendors who would obtain their enrichment services from Russia.

The major U.S. policy question is how large the quantity of 19.75% enriched uranium held in reserve should be. Here the key metric for “sufficient” needs to consider the scale of procurement of enrichment services that would large enough so that favorable terms could be obtains from U.S. enrichment vendors to make license modifications needed to increase enrichment levels above 5%.

I recommend that a minimum of 20 metric tons of U.S. excess HEU be reserved for advanced nuclear use, and down blended to 19.75%. Preferably, 40 to 80 metric tons of U.S. excess HEU should be reserved for this purpose.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'F. Peterson', with a large, stylized initial 'P'.

Per F. Peterson
William and Jean McCallum Floyd
Endowed Chair
Professor of Nuclear Engineering