



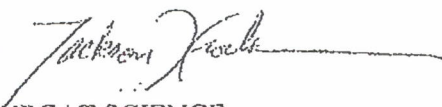
Department of Energy  
National Nuclear Security Administration  
Washington, DC 20585



August 1, 2013

MEMORANDUM FOR KENNETH PICHHA  
DEPUTY ASSISTANT SECRETARY  
OFFICE OF TANK WASTE AND NUCLEAR MATERIAL

ARTHUR G. ATKINS  
ACTING ASSISTANT DEPUTY ADMINISTRATOR  
OFFICE OF GLOBAL THREAT REDUCTION

FROM: JACKSON Q. CROCKER   
DIRECTOR  
OFFICE OF NUCLEAR THREAT SCIENCE

SUBJECT: Proliferation Attractiveness of Jülich Graphite Spheres

We have completed a technical evaluation of the High Temperature Gas-Cooled Reactor graphite fuel assemblies currently stored at Forschungszentrum Jülich (GmbH) to assess its material attractiveness. The graphite spheres each weigh approximately 200 g. The concentration of uranium (<sup>233</sup>U) is 0.5% by weight, as dioxide. Thorium dioxide is also present at 5% by weight along with a small amount of SiC (2.3 g). We assess the material as low attractiveness (Attractiveness level "E"), which only requires Category IV security protection. We also assess the material is not attractive to sub-state/terrorist entities in its current state. Since the material is stored in a secure environment in a politically stable country, it is not of a proliferation concern.

However, because the material is of U.S. -origin, the NNSA believes that the Department does have an unofficial responsibility to assure the material is adequately dispositioned. Therefore, NNSA supports "Work for Other" activities by DOE's Office of Environmental Management to help Germany develop and implement an appropriate disposition pathway for this material. Although not a nonproliferation activity, it does serve to minimize the amount of U.S. HEU at civilian facilities worldwide.

cc: Jay Tilden, NA-80  
Deleon Edgardo, EM-22

~~Not for public release under the Freedom of Information Act (5 U.S.C. 552). Exemption from public release. Department of Energy requires public release. Name: J. Q. Crocker, NA-82 Date: 07/31/13~~

~~OFFICIAL USE ONLY~~