

NE-22-28597 LEU+ UF6 Physical Chemistry Study

Orano Federal Services LLC, in Charlotte, North Carolina, is a technology and services provider for decommissioning shutdown nuclear energy facilities, used fuel management, federal site clean-up and closure, and the sale of uranium, conversion, and enrichment services to the U.S. commercial and federal markets.

Previous studies for UF₆ limits in shipping containers were limited to enrichment up to 5%. The objectives of this new study will take that enrichment to 10%. The project will review the available literature and update these studies with current techniques, evaluate the impact of higher enrichments in safety criticality cases in transport conditions, and publish a report that will serve as the basis to the safety criticality analysis that will be provided for review and approval to the radioactive material transport regulators, for the DN-30 package with 30B cylinders containing enrichment higher than 5%.

The Nuclear Energy and Fuel Cycle Division at Oak Ridge National Laboratory (ORNL) has the facilities and experienced staff to perform studies to establish realistic physical and chemical configurations for the 30B cylinder with water flooding. A successful project will yield a new technical study that will update the physical chemistry related to the enriched UF₆ with water to higher levels of enrichment.