

ORNL/LTR-2015/494

September 28, 2015

To: Terry A. Todd

From: Robert T. Jubin

Subject: Completion of the ORNL Fuel Cycle Research and Development (FCR&D) Level 4 Milestone – CETE Waste Disposal- ORNL – FT-15OR030216, MS# M4FT-15OR0302161, “Disposition of CETE Materials” due September 30, 2015

This letter documents the completion of the FCR&D Level 4 milestone for the CETE Waste Disposal- ORNL work package (FT-15OR030216), “Disposition of CETE Materials,” (M4FT-15OR0302161), due September 30, 2015.

DOE/NE provided funding at the start of the CETE project to disposition excess fuels and other materials used or produced during the project. The disposal of excess materials will reduce DOE/NE’s and ORNL’s potential legacy issues.

Remaining materials include:

- Approximately 560 inches of fuel in 35 segments from 4 reactors (~10 kg). The four reactors include North Anna, Three Mile Island, Surry-2 and Limerick. This is all DOE owned fuel that was obtained by ORNL from ANL. This material is currently stored at Building 3525. We have been exploring a number of additional uses for this material. A small portion of this material was used this year for evaluation of the tritium content of the cladding. A portion of this has also been used in support of used fuel disposition cladding tests but not consumed. Other potential uses include advanced tritium pretreatment tests as well as future separations work that has not yet been defined.
- Approximately 2 kg of voloxidized Surry fuel powder. This is currently stored in Building 7920. It has potential use in future advanced voloxidation studies.
- Approximately 3 kg of uranium oxide powder that was recovered and purified from Dresden and North Anna fuel. Plans are currently to disposition this material to the LLLW system if no further use can be identified.
- Solidified Dresden Fission Products. This will continue to be stored at Building 7920 pending disposition.
- Tc containing liquid. This has been combined with the residual Am/Cm and fission products from the North Anna Fuel and stored in tank T-22. It is expected that this liquid will be dewatered and calcined. The calcine will be stored in Building 7920 pending disposition.
- Cladding from North Anna, Dresden and Surry fuel. This is being retained for Zr recycle studies.
- CETE Voloxidizer. The plan for removing the voloxidizer from a hot cell was developed in early FY13. The plan includes the recovery of any additional ‘loose’ fuel materials from the process lines and components and breakdown of the major components.

Components are then to be packaged for disposition or relocated within the Building 3525 hot cells to free up space for other experimental systems. It was originally thought that the unit would be removed in FY14 but plans for the use of the cell space changed and it was decided to leave the unit in place until such time as the space is required. It currently appears that the unit will be removed from its current location in the hot cell in early FY16.

If you have any questions, please contact me at (865) 574-4934, Barry Spencer at (865) 574-7143, or Porter Bailey at (865) 576-8320.

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