

ASTD/TDI Project Static Report

Deployment of Combined Thermal Epithermal Neutron (CTEN) Prototype at Los Alamos National Radio Assay and Nondestructive Testing (RANT) Facility

Focus Area:	Mixed Waste Focus Area	Focus Area Manager: Kenneth Merrill, (208) 526-0797
TTP No.:	AL19MW51	Principal Investigator: Robert Estep, (505) 667-3683
Lead Site:	Albuquerque - Los Alamos National Laboratory	
Project No.:	99-ASTD-16	Technology Vendor(s)/Commercial Partner(s):
Tech ID/TMS No.:	1568	Radio Assay and Nondestructive Testing (RANT) Facility, Los Alamos, LANL

Related Publication(s): Nondestructive Waste Assay using Combined Thermal Epithermal Neutron Interrogation, DOE/EM (in printing)

Web Page(s):

Description: The CTEN instrument was designed to improve on passive active neutron assay capabilities to better correct for the matrix and source effects on the measurement. The enhanced capabilities designed into the CTEN system include: (1) active and epithermal neutron interrogation for detection of self-shielding fissile material; (2) new type of neutron multiplicity module for both active and passive measurements; (3) detectors and methods to determine the distribution of fissile material in a waste drum; (4) Pulse-Arrival-Time Recording modules; (5) flux monitors to detect matrix inhomogeneities; (6) methods to use the additional matrix information to improve assay accuracy.

Application: Waste drums that contain Pu levels at or near the LLW/TRU limit or contain high Pu levels with high Am-241 will be characterized at the RANT facility. Waste disposition, WIPP disposal or LLW disposal, is based on the assay results. Active neutron assay is the only technique that can assay TRU waste near the LLW/TRU cutoff in a majority.

Location(s): Radio Assay and Nondestructive Testing (RANT) Facility, Los Alamos

Technology(ies):

CTEN TRU Waste Assay Method

	Funding (\$K):	<u>FY-98</u>	<u>FY-99</u>	<u>FY-00</u>	<u>FY-01</u>	<u>Total</u>
TTP No.:	AL19MW51	\$0	\$325	\$425	\$0	\$750
Leverage Source:	MWFA					\$3,996
					Funding Total (\$K):	\$4,746

Cost Savings (\$M):	<u>Proposal</u>	<u>Deployment Plan/TTP</u>	<u>Current Focus Area Projection</u>
	\$50,000	\$50,000	\$50,000