

**NEER FY 2001
PROJECT ABSTRACT**

Grant Number: 01ID14103

Project Title: Development of Real-Time Measurement of Effective Dose for High Dose Neutron Fields

Lead PI: Leslie Braby, Texas A&M University

Abstract: Evaluation of the dose and dose equivalent in the high dose rate neutron exposure facilities needed for radiation response studies and medical applications remains a challenging problem. For example, the dose rate and neutron spectrum in the dry well exposure area at the Texas A&M reactor has been characterized by TLD and activation foil measurements, but substantial uncertainty remains. We propose to develop a measurement system, based on small, low pressure, proportional counters operating in the variance/covariance mode to determine the dose and mean specific energy in high dose rate mixed radiation fields. By using a small simulated site size, typically much less than 300 nm, the differences between LET and lineal energy can be shifted to very low neutron energies. By using detectors with different wall materials, different sensitivities to fast neutrons, gamma rays, and thermal neutrons can be achieved. These detectors will provide additional information, derived from different interactions between radiation and matter, to improve the characterization of high dose rate radiation fields used in radiation biology and medical studies.