

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Savannah River National Laboratory Underground Counting Facility¹ TIM BROWN, SRNL — The SRNL UCF is capable of detecting extremely small amounts of radioactivity in samples, providing applications in forensics, environmental analyses, and nonproliferation. Past customers of the UCF have included NASA, (Long Duration Exposure Facility) the IAEA, (Iraq), and nonproliferation concerns. The SRNL UCF was designed to conduct ultra-low level gamma-ray analyses for radioisotopes at trace levels. Detection sensitivity is enhanced by background reduction, high detector efficiency, and long counting times. Backgrounds from cosmic-rays, construction materials, and radon are reduced by counting underground, active and passive shielding, (pre-WWII steel) and situation behind a Class 10,000 clean facility. High-detection efficiency is provided by a well detector for small samples and three large HPGe detectors. Sample concentration methods such as ashing or chemical separation are also used. Count times are measured in days. Recently, two SCUREF programs were completed with the University of South Carolina to further enhance UCF detection sensitivity. The first developed an ultra-low background HPGe detector and the second developed an anti-cosmic shield that further reduces the detector background. In this session, we will provide an overview status of the recent improvements made in the UCF and future directions for increasing sensitivity.

¹Work described here was supported by the South Carolina Universities Research and Education Foundation

Tim Brown
SRNL

Date submitted: 30 Jun 2006

Electronic form version 1.4