



User Note: Superior Sensitivity allows Berkeley Nucleonics SAM 940 to Locate and Identify Special Nuclear Material along with many other Isotopes

The SAM 940 utilizes a transform that provides spectral enhancement on a second by second basis. This patented algorithm is called Quadratic Compression Conversion (QCC) and allows real time subtraction of background which dramatically improves sensitivity. Therefore, the SAM does not wait for the end of a long acquisition to subtract background but rather subtracts ambient background, Compton Effect and bremsstrahlung continuously which greatly aids in the search process as well as identification. It is well known that statistical analysis of this type is never perfect but results show an improvement in real time sensitivity of at least a factor of 10 to 20 depending upon the size of detector. This gives the user the ability to move at a reasonable pace while searching and still be assured that radioactive sources will be found and identified.

Berkeley Nucleonics Corporation (BNC) only deals with detectors of reasonable size when searching for SNM. For sodium iodide (NaI) 2x2 and 3x3 inch detectors are available. BNC also offers a high resolution (3%) 1.5 x 1.5 inch lanthanum bromide (LaBr) detector that has an efficiency greater than the 3x3 inch NaI detector. These detector systems are well suited for identifying and quantifying nuclear material such as NORM uranium, DU, LEU, HEU and transuranics with gamma emission. Efficiency is very important for analyzing many of these nuclides with their high energy gamma lines. Therefore, shielding does not present a significant problem when determining identification of the material mentioned above. The use of CZT on the other hand does become a problem when needing to use high energy gamma lines. The efficiency of CZT falls off dramatically when detecting energies of 1000 to 2600 keV – very long acquisitions would still yield poor results and searching is out of the question.

All spectra are saved on a compact flash card and can be opened with a spectral viewer containing all pertinent data. Quantum analysis is also available to identify and quantify nuclides.

To learn more about the SAM 940 capabilities please contact BNC headquarters.

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