Abstract Submitted for the HAW14 Meeting of The American Physical Society

Measuring Flash X-Ray Spectra with a Compton Spectrometer¹ AMANDA GEHRING, MICHELLE ESPY, TODD HAINES, JAMES HUNTER, NICK KING, FRANK MERRILL, ROBERT SEDILLO, ALGIS URBAITIS, PETR VOLEGOV, Los Alamos National Laboratory — The determination of the x-ray energy spectra of flash radiographic sources is difficult due to the short nature of the pulses (~ 50 ns). Recently, a Compton spectrometer has been refurbished and investigated as a potential device for conducting these measurements. The spectrometer was originally designed and characterized by Morgan et al [1]. The spectrometer consists of a 300 kg neodymium-iron magnet and measures spectra in the < 1 MeV to 20 MeV energy range. In this apparatus, the incoming x-rays are collimated into a narrow beam before encountering a converter foil. Compton electrons are ejected and collimated so that the forward-directed electrons enter the magnetic field region of the device. The position of the electrons on the magnet focal plane is a function of their energy, allowing the x-ray spectrum to be reconstructed. Recent energy calibration measurements and the spectrum reconstruction of a Bremsstrahlung source will be presented.

[1] Morgan et al., Nucl. Instr. and Meth. A308 (1991) 544

¹LA-UR-14-23602

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Date submitted: 31 May 2014

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