Abstract Submitted for the DPP15 Meeting of The American Physical Society

Optical Spectroscopy of a Mega-Ampere Dense Plasma Focus ERIC DUTRA, NICHELLE BENNETT, EDWARD HAGEN, EUGENE HUNT, Natl Security Technologies LLC, SCOTT HSU, Los Alamos National Laboratory, JEFFREY KOCH, PATRICK ROSS, THOMAS WALTMAN, Natl Security Technologies LLC — An optical streaked spectroscopy system was developed to evaluate the spectral emission of the run-down, run-in and pinch phase on the Gemini Dense Plasma Focus (DPF). Time-resolved emission spectra were captured for hydrogen, deuterium, argon, and krypton gas from these phases. The emission was focused onto a fiber, and fed to a spectrometer that was coupled to a streak camera. Spectra of hydrogen, deuterium, argon, and krypton gas were modeled using Spec3D. Plasma parameters including electron density and temperature, from LSP simulations of the DPF discharge, were loaded into the Spec3D simulation to evaluate the emission spectra. Spectra collected from DPF on the streaked spectrometer system were then compared to the Spec3D simulations, and used to verify known optical emission lines for the various gases and to identify possible contaminants. This work was done by National Security Technologies, LLC, under Contract No. DE-AC52-06NA25946, and by Los Alamos National Laboratory, under Contract no. DE-AC52-06NA25396 with the U.S. Department of Energy. DOE/NV/25946-2519

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Date submitted: 23 Jul 2015

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