

Abstract Submitted  
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**Sandia National Laboratories' Z-Petawatt Laser Facility: A Progress Report**<sup>1</sup> G.R. BENNETT, P.K. RAMBO, B.W. ATHERTON, E. BRAMBRINK, A.D. EDENS, M. GEISSEL, J.L. PORTER, J. SCHWARZ, I.C. SMITH, Sandia National Laboratories — Sandia National Laboratories' Z accelerator, which is currently being upgraded and will become operational again 2007, includes the Z-Beamlet Laser (ZBL) system [P. K. Rambo *et al.*, Appl. Opt. **44**, 2421 (2005)] for x-ray imaging support. ZBL is a long-pulse, multi-kJ, TW-class device. For higher energy x-ray requirements on Z, and possible fast ignition studies, an additional laser, the short-pulse, multi-kJ, PW-class Z-Petawatt Laser (ZPW), is presently under construction. In the first phase, 50 J, 0.5 ps pulses have been generated, with pulse compression via commercially-available gratings. In the second phase, with the main cavity slab amplifiers operated at higher gain, followed by beam expansion onto larger (94 cm) Nova gold gratings, an energy enhancement to several hundred J will be achieved. In the final phase, full aperture 4-pass amplification through the main amps, and compression via large multilayer dielectric gratings, will lead to 2 kJ in 1-10 ps.

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