

Variable Energy 2-MeV S-Band Linac for X-ray and Other Applications

*Howard Bender, Dave Schwellenbach, Ron Sturges
National Security Technologies, LLC, Los Alamos Operations, Los Alamos, NM*

*James Potter
JP Accelerator Works, Los Alamos, NM*

*Rusty Trainham
National Security Technologies, LLC, Special Technologies Laboratory, Santa Barbara,
CA*

We will describe the design and operation of a compact, 2-MeV, S-band linear accelerator (linac) with variable energy tuning and short-pulse operation down to 15 ps with 100-A peak current. The design consists of a buncher cavity for short-pulse operation and two coupled resonator sections for acceleration. Single-pulse operation is accomplished through a fast injector system with a 219-MHz subharmonic buncher. The machine is intended to support a variety of applications, such as X-ray and electron beam diagnostic development and, recently, electron diffraction studies of phase transitions in shocked materials.

This work was done by National Security Technologies, LLC, under Contract No. DE-AC52-06NA25946 with the U.S. Department of Energy.