STATUS OF THE DARHT PHASE 2 LONG-PULSE ACCELERATOR*

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The Dual-Axis Radiographic Hydrodynamics Test (DARHT) facility will employ two perpendicular electron Linear Induction Accelerators to produce intense, bremsstrahlung x-ray pulses for flash radiography. We intend to produce measurements containing three-dimensional information with sub-millimeter spatial resolution of the interior features of very dense, explosively-driven objects. The facility will be completed in two phases with the first phase having become operational in July 1999 utilizing a single-pulse, 20-MeV, 2-kA, 60-ns accelerator, a high-resolution electro-optical x-ray imaging system, and other hydrodynamics testing systems. The second phase will be operational in 2003 and features the addition of a 20-MeV, 2-kA, 2-microsecond accelerator. Four short electron micropulses of variable pulse-width and spacing will be chopped out of the original, long accelerator pulse for producing time-resolved x-ray images. The second phase also features an extended, high-resolution electro-optical x-ray system with a framing speed of about 2-Mhz. Production of the first beam from the Phase 2 injector will occur this year. In this paper we will present the overall design of the Phase 2 long-pulse injector and accelerator as well as some component test results. We will also discuss the downstream transport section that contains the fast kicker used to separate the long-pulse beam into short bursts suitable for radiography as well as the x-ray conversion target assembly. Selected experimental results from this area of the project will also be included. Finally, we will discuss our commissioning plans and diagnostics.

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