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CYGNUS SYSTEM TIMING

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The Cygnus Dual Beam Radiographic Facility consists of two identical radiographic sources each with a dose rating of 4-rad at 1 m, and a 1-mm diameter spot size. The development of the rod pinch diode was responsible for the ability to meet these criteria¹. The rod pinch diode in a Cygnus machine uses a 0.75-mm diameter, tapered tip, tungsten anode rod extended through a 9-mm diameter, aluminum cathode aperture. When properly configured, the electron beam born off the aperture edge can self-insulate and pinch onto the tip of the rod creating an intense, small x-ray source. The Cygnus sources are utilized as the primary diagnostic on Subcritical Experiments that are single-shot, high-value events. The system timing on Cygnus will be evaluated as related to system elements: delay generators, trigger generators, Marx, pulse forming line, inductive voltage adder and rod pinch diode. As Cygnus trigger generators are a significant jitter source, spare trigger generators will also be included in this evaluation.

1. G. Cooperstein et al., "Theoretical Modeling and experimental Characterization of a Rod-Pinch Diode," in *Physics of Plasmas*, Vol. 8, Number 10, October 2001.

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