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Development of a 100 kV Pulse Generator for Driving an Electron Scanner used in Proton Beam Profile Measurements

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The Spallation Neutron Source (SNS) utilizes an electron scanner in the accumulator ring for non-destructive transverse profiling of the proton beam. The electron scanner consists of a high voltage pulse generator driving an electron gun, a medium voltage ramp generator, and a CCD camera. A new high voltage pulse generator that provides 100 kV pulses with rise times of less than 200 ns, flattop of 200ns, and regulation of <5% has been designed, delivered, and undergone extensive testing. The pulse generator has been operationally verified with the existing control system and simulated loads. Full system testing with the actual electron scanner is planned. This paper details the requirements, design, setup, and test results of the high voltage pulse generator.

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