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EPICS Slow Controls System in the Search for a Neutron Electric Dipole Moment COURTNEY TAYLOR, North Carolina State University -The measurement of a nonzero electric dipole moment (EDM) of the neutron would significantly impact our understanding of the nature of the electro-weak and strong interactions. The goal of the current experiment is to improve the measurement sensitivity of the EDM by two orders of magnitude. The experiment is based on the magnetic-resonance technique of rotating a magnetic dipole moment in a magnetic field. The measurement of the neutron EDM comes from a measurement of the difference in the precession frequencies of neutrons when a strong electric field parallel to the magnetic field is reversed. This construction project is divided into a number of subsystems, five of which require automated control. The Experimental Physics and Industrial Control System (EPICS) is a slow-controls data acquisition (DAQ) system and is the system of choice for this experiment. It was selected for both its ease of use and ability to act as a total control system for large systems. As part of the initial research and development for the EDM project, we are setting up a prototype system that will eventually be copied and sent to the subsystem managers. This prototype consists of a VME crate housing a single board computer and DAQ modules. EPICS, running on a PC with CentOS Linux-x86, interfaces with the VME single board computer and provides a graphical user interface for the control system. The details on building this prototype DAQ system will be presented. Supported in part by the U.S. DoE.

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