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Characterization of New VANDLE Bars for Reaction and Decay Experiments JACOB ALLEN, N.T. BREWER, R. GRZYWACZ, M. MADURGA, S.V. PAULAUSKAS, S.Z. TAYLOR, University of Tennessee, J.A. CIZEWSKI, Rutgers University, W.A. PETERS, Oak Ridge Associated Universities — Neutron detectors are used in studies of neutron rich nuclei which give off neutrons in the process of β-delayed emission. Understanding the rate of this process helps to create tighter safety margins for nuclear reactors. These decay data as well as data gathered from the reactions associated with neutron emission give information about nuclear properties, which can also be used to model the r-process which is responsible production of elements beyond iron. The Versatile Array of Neutron Detectors at Low Energy [1] was developed in order to understand the answers to some of these problems. VANDLE consists of plastic scintillators and is designed to detect neutrons in energy ranges from $\sim$0.1 to 10 MeV from reaction and decay processes. The use of a Pixie-16 system gives VANDLE a sub-nanosecond Time of Flight resolution [2]. Experiments have already been run with VANDLE with the small (3x3x60 cm) and large (5x5x200cm) bars. New medium size (3x6x120 cm) bars are being prepared for use in future experiments. In addition to VANDLE, the results of the characterization of the medium bars will be presented.

[1] C. Matei et al., PoS(NIC X)138, 1-5 (2008)
[2] M. Madurga et al. AIP Conf. Proc. 1336, 586 (2011).

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