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Measurement of (d,p) reactions on neutron-rich nuclei around the N=82 shell closure STEVEN PAIN, ORNL, ORRUBA COLLABORATION, RIBENS COLLABORATION — The energies, spins and spectroscopic information of single-particle states around shell closures near to suggested r-process paths are of significant astrophysical interest, providing constraint on nuclear structure models and direct neutron-capture cross sections. Measurements of (d,p) reactions on n-rich nuclei yield can yield such important information. The ^{134}Te(d,p)^{135}Te reaction, along with ^{130}Sn(d,p)^{131}Sn, has been measured in inverse kinematics at the Holifield Radioactive Ion Beam Facility at around 4.5 MeV/A utilizing deuterated plastic targets. Proton ejectiles were detected using an early implementation of the Oak Ridge Rutgers University Barrel Array (ORRUBA) in conjunction with the Silicon Detector Array (SIDAR). Experimental details and the data analysis, including excitation energies and angular distributions, will be presented. *This work is supported in part by the U.S. Department of Energy under contract numbers DE-FG52-03NA00143 (Rutgers), DE-AC05-00OR22725 (ORNL), DE-FG02-96-ER40955 and DE- FG02-96ER40990(TTU), and the National Science Foundation.

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