THE CENTRAL U.S. SEISMIC OBSERVATORY: SOME PRELIMINARY RESULTS

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A combination of strong-motion accelerometers, medium-period (0.06–30 Hz) seismometers, and tiltmeters were installed at various depths in three boreholes at the Central U.S. Seismic Observatory (CUSSO) in Fulton County, Kentucky, near the center of the New Madrid Seismic Zone. The deepest borehole penetrated through 586 m of loose to stiff unconsolidated sediments and was terminated 8 m into Ordovician bedrock. CUSSO consists of the surface accelerometers and medium-period seismometers, 30-m accelerometers, 260-m accelerometers, 518-m accelerometers, and 590-m accelerometers, medium-period seismometers, and tiltmeters. The site was characterized with surface seismic refraction/reflection profiling, borehole geophysical logs, and a geologic log. CUSSO provides a unique opportunity to study seismic wave propagations through unconsolidated sediments in the New Madrid Seismic Zone. CUSSO has recorded some local earthquakes, particularly the 2011 central Arkansas earthquake swarm, as well as other events. These recordings clearly show the impacts of the loose to stiff unconsolidated sediments on wave propagations.