

## **Deep Hole Project Scope and Transmittal Letter to DOE**

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Prepared for  
United States Department of Energy Portsmouth/Paducah Project Office  
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**Memorandum**

Date: August 17, 2006

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Through: Dr. Lindell Ormsbee, Director  
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RE: Release of “*Deep Hole Project*” – Project Description and Scope of Work.

Enclosed is the “Deep Hole Project” project description and scope of work. The “Deep Hole Project” is to installation a deep borehole: Phase I of the Central United States Seismic Observatory (CUSO) in Fulton County, Kentucky near the center of the New Madrid Seismic Zone (NMSZ). The CUSO will be installed through over 2000 feet of unlithified sediments and completed in bedrock at approximately 2100 feet below ground surface.

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Following the borehole installation, the CUSSO will be instrumented to obtain data that will allow seismologists and engineers to characterize the transfer of earthquake-induced energy from bedrock through unlithified sediment to the ground surface. The characterization data will be used to provide accurate inputs to models that are utilized by risk assessors, engineers, emergency preparedness officials, and emergency response officials so that they may more accurately evaluate, prepare for, design for, and respond to NMSZ earthquakes. Data from future CUSSO studies will be utilized to refine seismic hazard assessment and seismic engineering design at the United States Department of Energy - Paducah Gaseous Diffusion Plant, the City of Paducah, the Jackson Purchase Region of western Kentucky, and parts of four additional states that are potentially affected by NMSZ earthquakes.

Ultimately, the CUSSO will be instrumented to serve as a calibration site for regional strong-motion stations. Because of its proximal location to the most active portion of the NMSZ, the CUSSO is expected to be triggered 1 to 2 times a month which will provide the greatest amount of characterization data in a short period of time.

The CUSSO is a cooperative effort of the United States Department of Energy through funding to the University of Kentucky, the Kentucky Research Consortium for Energy and Environment, the Kentucky Geological Survey, the United States Geological Survey, and the University of Kentucky Department of Geological Sciences.

If you have any questions on the content of enclosed report please contact Steve Hampson at [Steve.Hampson@ky.gov](mailto:Steve.Hampson@ky.gov) / (502) 564-8390 x 4507. If you were cc'ed w/o attachment and would like a copy of the report, please contact Charles Mynhier at (859) 257-1299 to request a copy.

cc: with Report Attachment

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Mr. Jon Maybriar, KDWM  
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cc w/o Report Attachment

Mr. William Murphie, DOE-PPPO  
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