

**Allison, Becky**

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**From:** bill@williamdark.com  
**Sent:** Thursday, December 15, 2016 10:17 PM  
**To:** drillingstudyquestions  
**Subject:** 20161215-William-Dark

**Questions and Comments Pertaining to the Harbor Environmental Drilling Study,  
C and H Hog Farm, Newton County, Arkansas**

December 15, 2016

As an alum of the University of Arkansas, former geologist, and open hole field engineer at Halliburton, I would like to respectfully submit my questions pertaining to the wireline logging operation at the above referenced test well, known as B-1.

According to the information in Appendix 1, page 17 of Mr. Huetter's Field Notes indicates that the logging operator began setting up to run a conductivity log to check G.W. level at 14:10 on September 23. However, no conductivity/resistivity log is presented in the report. Was an induction log run, and if so, why is it not shown with the gamma and neutron porosity logs? If the sole purpose of the run was to determine G.W. level, why was the decision made to not record resistivity from the bottom of the borehole to casing. I could find no record in the report indicating the depth to which any casing was set. Is there an accompanying header for the logs, along with tool calibration information? If the borehole was not holding water, why was it not filled with water for a length of time to allow for induction and spontaneous potential logs to be run?

Because the drilling program was initiated due to concerns regarding anomalous resistivity signatures near the holding ponds (transect MTJ108 in particular), it seems highly unusual, and is disappointing that no resistivity or SP logs were presented in the report. Such information would have been valuable in calibrating resistivity values obtained by the OSU research team last year, much like velocity logs are used to calibrate seismic sections. Given the lost circulation issues regarding the (probable) void encountered at 59', as indicated in the Field Notes in Appendix 1, a caliper and borehole volume log would also have been useful in the logging program to confirm the void, along with a velocity/sonic log to help identify fractured zones.

Thank you for your time. I look forward to your reply.

William Dark