

**Marc A. Downing**  
**Consulting Petroleum Geologist**

**Geologic Report**  
**Drilling Time and Sample Log**

Operator **H&C Oil Operating, Inc.**  
 Lease **Butterfly Farms** No. **1-13**  
 API # **15-137-20753-0000**  
 Field **Hansen Estate Northeast**  
 Location **330' FSL & 1800' FWL**

Sec. **13** Twp. **4s** Rge. **22w**  
 County **Norton** State **Kansas**

Formation	Sample tops	Log Tops	Datum	Struct Comp
Top Anhydrite	1882	1882	+347	
Base Anhydrite	1913	1913	+316	
Topeka	3204	3203	-974	
Heebner	3403	3402	-1173	
Toronto	3430	3431	-1202	
LKC	3446	3446	-1217	
BKC	3634	3634	-1405	
Arbuckle	3696	3696	-1467	
Total Depth	3770	3770	-1541	

Reference Well For Structural Comparison **H&C - Diana #1**  
**330' FNL & 660' FWL, Sec. 24-4s-22w**

Drilling Contractor **Discovery Drilling, Rig #2**  
 Commenced **11-4-19** Completed **11-10-19**  
 Samples Saved From **3200** To **RTD**  
 Drilling Time Kept From **3100** To **RTD**  
 Samples Examined From **3200** To **RTD**  
 Geological Supervision From **3200** To **RTD**

Elevation **2229**  
 KB **2229**  
 DF **2227**  
 GL **2221**

Casing Record  
 Surface **8 5/8" @ 210'**  
 Production **None**

Electrical Surveys  
**CNDL, DIL**  
**MEL, Sonic**

**Summary and Recommendations**  
 The Butterfly Farms #1-13 ran structurally high throughout the LKC but lost structure at the Arbuckle. Good sample shows were encountered throughout the well, but were condemned via DST and/or log. Due to structural position, DST recovery, and log evaluation, it was decided to plug and abandon the well.

Respectfully Submitted,  
 Marc A. Downing

**ROCK TYPES**  
 shale, gry  
 Carbon Sh  
 Dolprim  
 Unst fw7>

**ACCESSORIES**  
 Stringer  
 Sandstone  
 Siltstone

**OTHER SYMBOLS**  
 DST  
 DST Int  
 DST alt  
 Core  
 Tail pipe

**MISC**  
 Daily Report  
 Digital Photo  
 Document  
 Folder  
 Link  
 Vertical Log File  
 Horizontal Log File  
 Core Log File  
 Drill Cuttings Rpt

**OIL SHOWS**  
 Even Sin  
 Spotted Sin 50-75 %  
 Spotted Sin 25-50 %  
 Spotted Sin 1-25 %  
 Questionable Sin  
 Dead Oil Sin  
 Fluorescence

**MINERAL**  
 Chert, dark  
 Chert White

