



**GEOLOGIST'S REPORT**

OPERATOR **MURFIN DRILLING COMPANY, INC.**  
LEASE **KELLER-AUST # 1-28**

ELEVATIONS  
KB **2212 Ft.**  
CL **2207 Ft.**

LOCATION **430 FNL & 880 FWL**

SEC. **28** TWPSP **11S** RGE **20W**

COUNTY **ELLIS** STATE **KANSAS**

FIELD **CROMB SOUTH**

CONTRACTOR **Murfin Drilling Company** RIG NO. **16**

COMMENCED **24 October 2012** MUD TYPE **Chemical**

MUD DISPLACED **2829** MUD TYPE **Chemical**

DRILLING TIME KEPT FROM **3180** TO **3950**

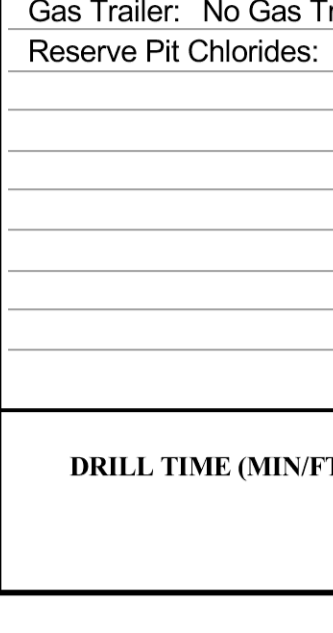
SAMPLES SAVED FROM **3180** TO **3950**

SAMPLES EXAMINED FROM **3180** TO **3950**

GEOLOGICAL SUPERVISION FROM **3175** TO **3950**

GEOLOGIST ON WELL **Paul Gunzelman**

FORMATION NAME	TOP DATUM	LOG	SAMPLE DATUM	DEPTH
Stone Corral	1643	+569	1644	+568
Base/Anhydrite	1683	+529	1687	+525
Topoka	3273	-1061	3272	-1060
Heebner Shale	3495	-1283	3494	-1282
Toronto	3516	-1304	3516	-1304
Lansing	3536	-1324	3536	-1324
Base/Kansas City	3724	-1483	3725	-1484
Arbuckle	3848	-1636	3848	-1636
Total Depth	3952	-1740	3950	-1738



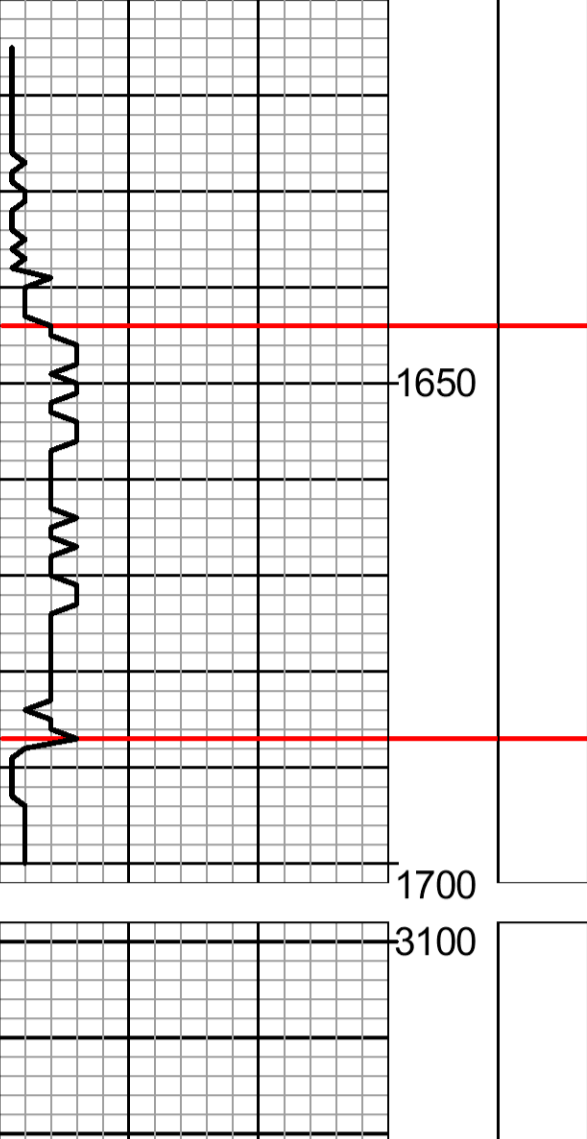
**ELECTRICAL SURVES:**  
**Pioneer Energy Services**  
 Comp. Neutron Density  
 Dual Induction  
 Micro-resistivity  
 Comp. Sonic

**CASING RECORD**  
 Conductor Name  
 Surface **8 5/8" @ 217**  
 Production **5 1/2" @ 3948'**

ALL MEASUREMENTS FROM K/B

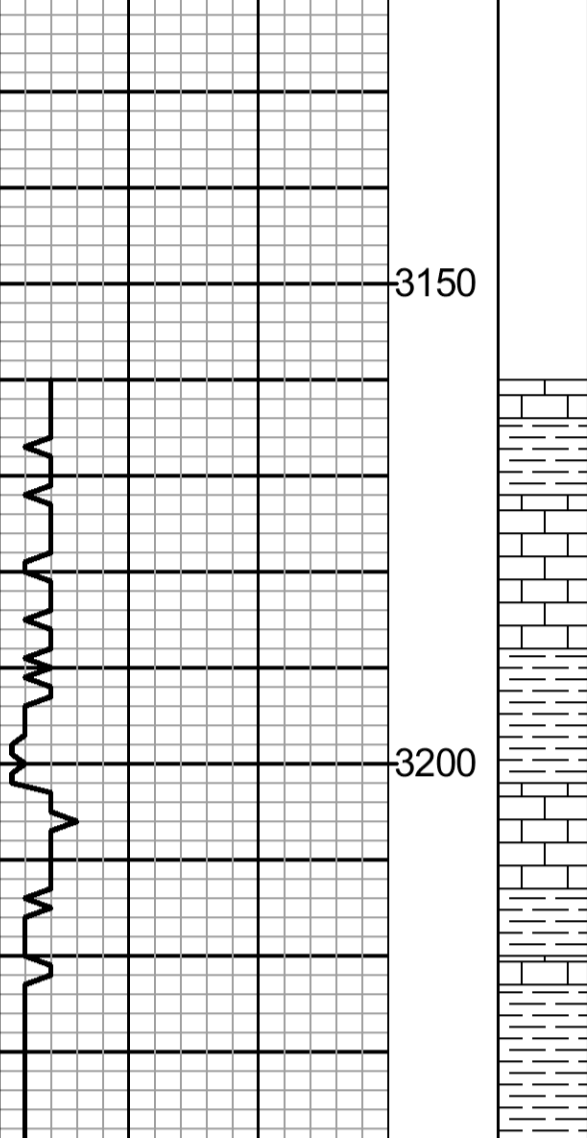
REMARKS  
 API 15-051-26414-00-00  
 Drilling Fluids: Morgan Mud, Inc. (David Lines, engineer)  
 Drill Stem Testing: Trilobite Testing, Inc. (Cody Bloedorn, tester)  
 Gas Trailer: No Gas Trailer  
 Reserve Pit Chlorides: 62,000 ppm.

DRILL TIME (MIN/FT)	DEPTH	LITHOLOGY	SAMPLES	REMARKS
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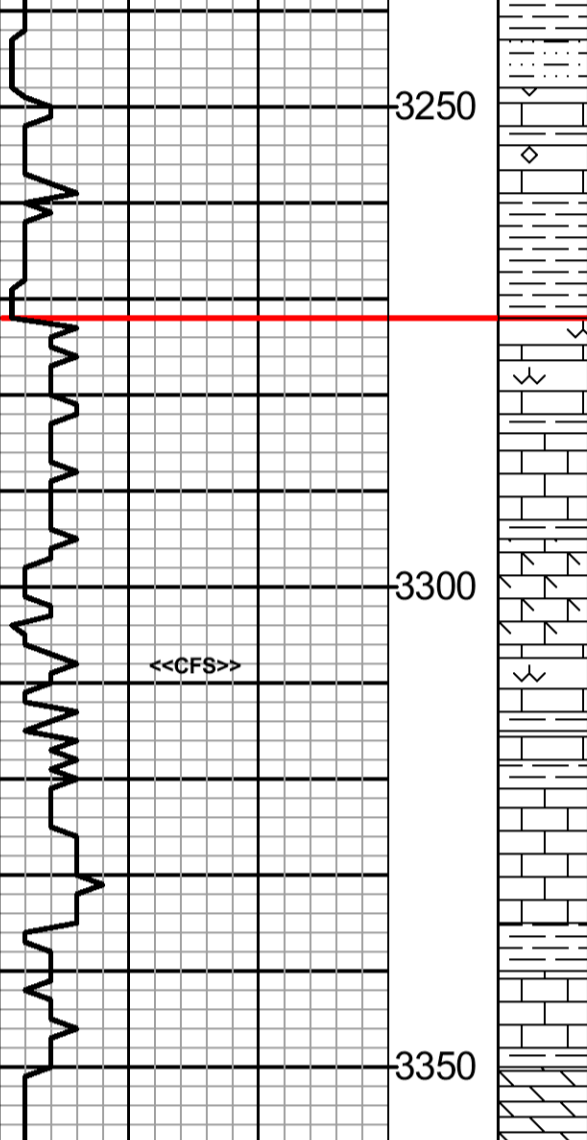
STONE CORRAL  
**1644 (+568)**  
 BASE/ANHYDRITE  
**1687 (+525)**

8:36 AM, 27 October 2012  
 Morgan Mud check @ 3179'  
 Vis: 52, Wt: 8.8, WL: 6.8  
 Chlor: 3,500 ppm, LCM: 0#



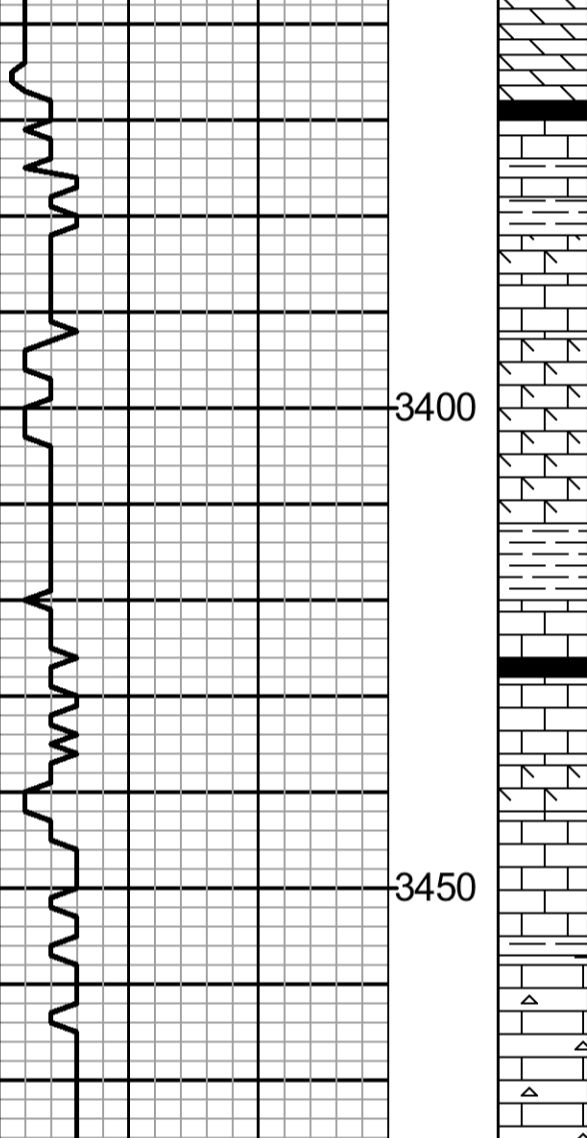
8:36 AM, 27 October 2012  
 Morgan Mud check @ 3179'  
 Vis: 52, Wt: 8.8, WL: 6.8  
 Chlor: 3,500 ppm, LCM: 0#

TOPEKA  
**3272 (-1060)**



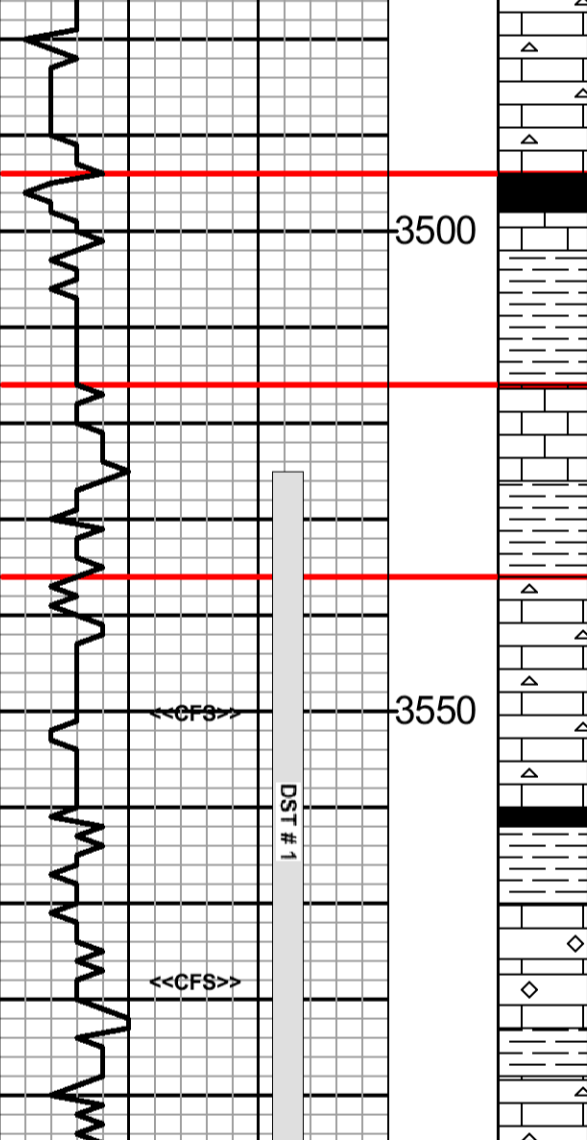
TOPEKA  
**3272 (-1060)**

Morgan Mud check @ 3598'  
 Vis: 59, Wt: 9.2, WL: 6.8  
 Chlor: 4,600 ppm, LCM: 0#



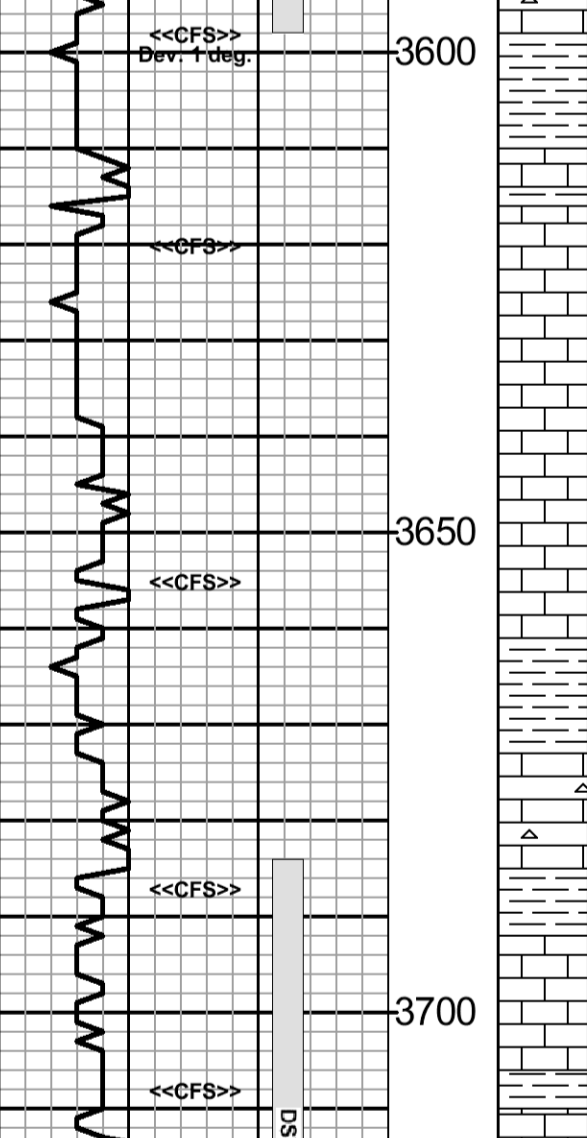
HEEBNER SHALE  
**3494 (-1282)**

Morgan Mud check @ 3744'  
 Vis: 57, Wt: 9.3, WL: 6.4  
 Chlor: 4,600 ppm, LCM: 0#



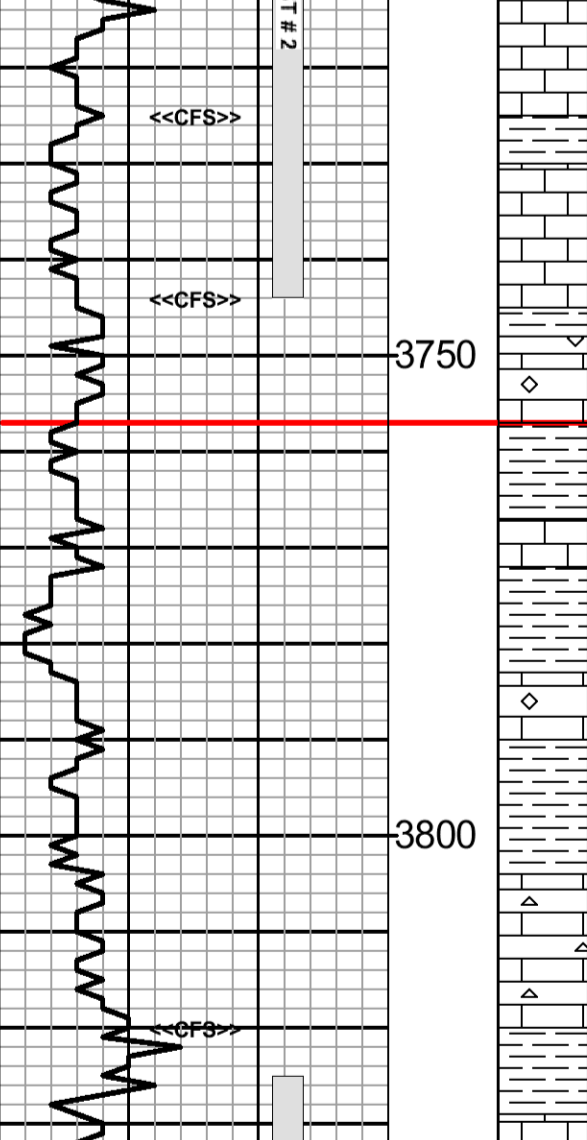
TORONTO  
**3516 (-1304)**

Morgan Mud check @ 3744'  
 Vis: 57, Wt: 9.3, WL: 6.4  
 Chlor: 4,600 ppm, LCM: 0#



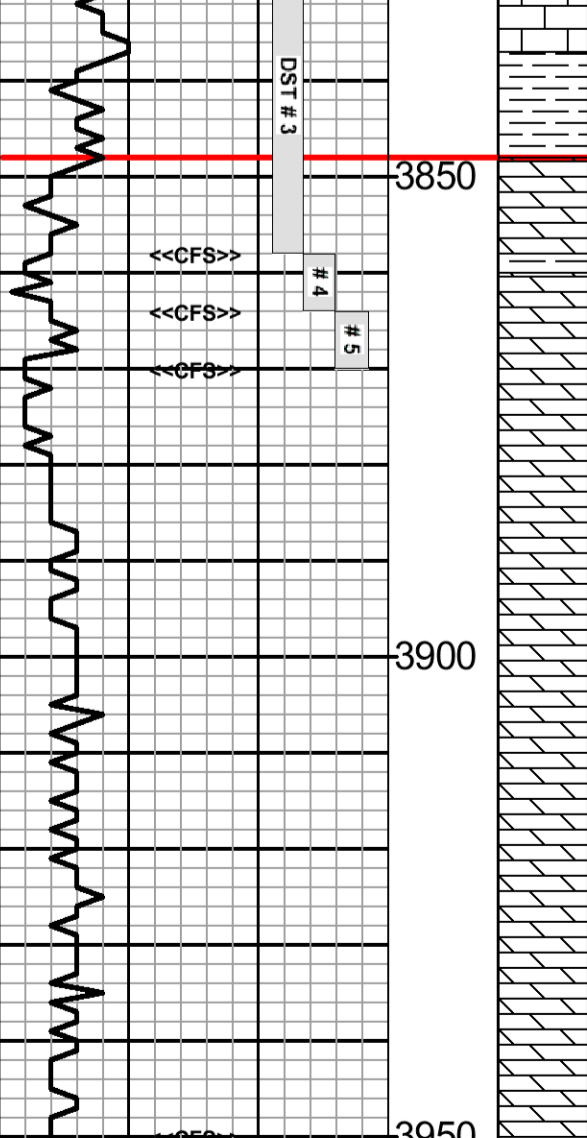
LANSING  
**3536 (-1324)**

DST # 1 3525 - 3598  
 30"-60"-30"-60"  
 IF: Weak 1/2 inch blow  
 FF: Very weak 1/4 inch blow  
 RECOVERY:  
 10 Ft. Mud w/Oil Spots  
 IHP: 1795 psi. FHP: 1763 psi.  
 IFP: 48-51 psi. ISIP: 712 psi.  
 FFP: 50-53 psi. FSIP: 634 psi.  
 BHT: 108 deg. F.



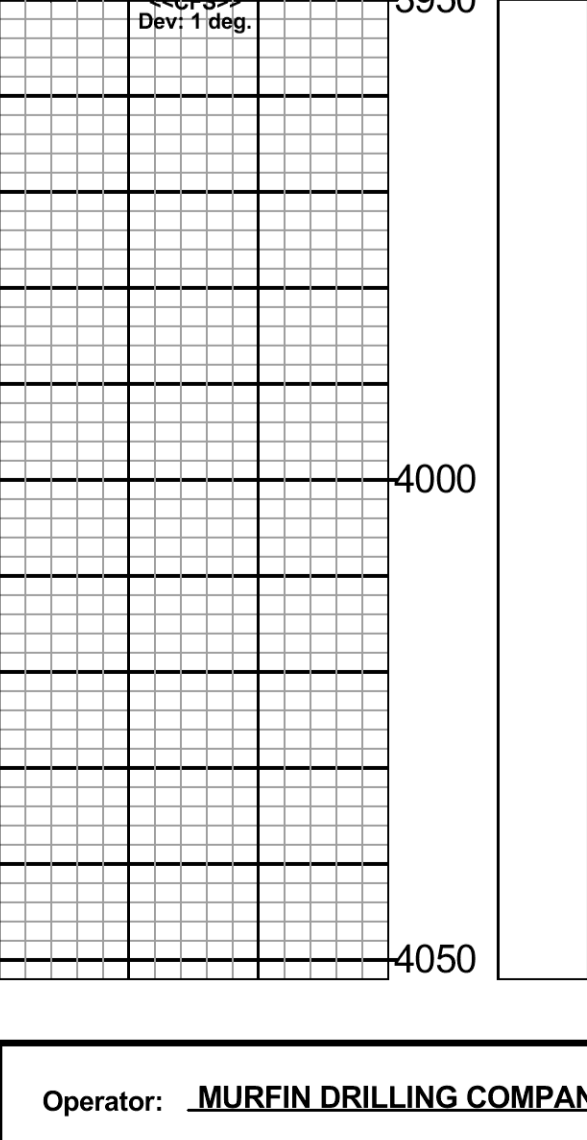
LANSING  
**3536 (-1324)**

DST # 2 3684 - 3744  
 30"-60"-30"-60"  
 IF: Very weak blow, died in 6 min.  
 FF: No blow  
 RECOVERY:  
 3 Ft. Mud w/Oil Spots  
 IHP: 1840 psi. FHP: 1807 psi.  
 IFP: 16-17 psi. ISIP: 218 psi.  
 FFP: 16-18 psi. FSIP: 210 psi.  
 BHT: 103 deg. F.



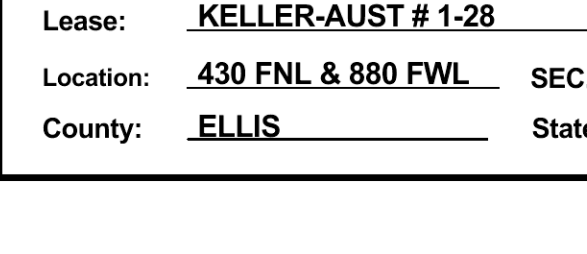
BASE/KANSAS CITY  
**3757 (-1545)**

DST # 3 3825 - 3858  
 30"-60"-60"-90"  
 IF: Good blow, BOB in 27 min.  
 FF: Fair blow, BOB in 31 min.  
 No return blow during Shut-ins  
 RECOVERY:  
 85 Ft. Clean Oil, (20 grav. API)  
 135 Ft. Mud & Gas Cut Oil  
 (10%Mud, 5%Gas, 85%Oil)  
 60 Ft. Mud & Wtr Cut Oil  
 (10%Mud, 70%Wtr, 20%Oil)  
 60 Ft. Oil spotted Muddy Wtr.  
 (Chlor: 20,000 ppm)  
 IHP: 1925 psi. FHP: 1891 psi.  
 IFP: 17-25 psi. ISIP: 1127 psi.  
 FFP: 75-155 psi. FSIP: 1070 psi.  
 BHT: 117 deg. F.



BASE/KANSAS CITY  
**3757 (-1545)**

DST # 4 3858 - 3864  
 30"-60"-30"-60"  
 IF: Weak surf. blow died in 27 min.  
 FF: No blow  
 RECOVERY:  
 20 Ft. Muddy Water  
 (Chlor: 20,000 ppm)  
 IHP: 1946 psi. FHP: 1899 psi.  
 IFP: 17-25 psi. ISIP: 1127 psi.  
 FFP: 29-32 psi. FSIP: 1043 psi.  
 BHT: 116 deg. F.



ARBUCKLE  
**3848 (-1636)**

Morgan Mud check @ 3858'  
 Vis: 56, Wt: 9.3, WL: 6.8  
 Chlor: 5,200 ppm, LCM: 3#



TOTAL DEPTH  
**3950 (-1738)**

DST # 5 3864 - 3870  
 30"-60"-60"-90"  
 IF: Fair blow incr to 8 inches  
 FF: Fair blow, BOB in 39 min.  
 RECOVERY:  
 275 Ft. Muddy Water  
 (Chlor: 16,000 ppm)  
 IHP: 1947 psi. FHP: 1881 psi.  
 IFP: 66-145 psi. ISIP: 1187 psi.  
 BHT: 120 deg. F.

Operator: **MURFIN DRILLING COMPANY, INC.**  
 Lease: **KELLER-AUST # 1-28**  
 Location: **430 FNL & 880 FWL SEC. 28 TWPSP 11S RGE 20W**  
 County: **ELLIS** State: **KANSAS**