

# Thomas J. Funk Petrolium Geologist

785-542-3359

**Geologists Report**  
**Drilling Time and Sample Log**

**OPERATOR** Murfin Drilling Co., Inc  
**LEASE** Towns 'A'  
**WELL NO.** #2-21

**FIELD** Development  
**LOCATION** 2100' FNL & 335' FWL  
**SEC.** 21  
**COUNTY** Thomas

**API** 15-193-20832  
**RGE** 34W  
**TWP.** 10S  
**STATE** Kansas

**CONTRACTOR** Murfin Dring Co  
**COMM.** 1/16/2012  
**RTD** 4/30  
**SAMPLES SAVED FROM** 3800  
**DRAWINGS MADE FROM** 3800

**LOG DATE** 1/25/2012  
**LOG TIME** 4:08  
**TO TD**  
**TO TD**  
**TO TD**

**GEOLOGICAL SUPERVISION FROM** 3854 TO TD  
**MUD UP** 3500  
**TYPE MUD** Chemical

FORMATION	LOG TOP DATUM	SAMPLE TOP DATUM	STRUCT COOMP	STRUC DIL
Attydrite	2752 (-4497)	2754 (-4485)	-2	
B/Attydrite	2772 (-4470)	2784 (-4465)	-3	
Topeka	3313 (-4666)	3317 (-4668)	-8	
Hebbner Sh	4131 (-4882)	4131 (-4882)	-10	
Lansing	4173 (-5234)	4172 (-5233)	-9	
Winroe Creek	4308 (-1059)	4309 (-1060)	-9	
Stark Sh	4393 (-1144)	4397 (-1148)	-8	
Marmaton	4482 (-1233)	4485 (-1236)	-8	
Pawnee	4593 (-1344)	4596 (-1347)	-7	
Cherokee Sh	4676 (-1426)	4678 (-1429)	-10	
Mississippian	4722 (-1473)	4722 (-1473)	-5	
Johnson Zone	4820 (-1571)	4824 (-1575)	-5	

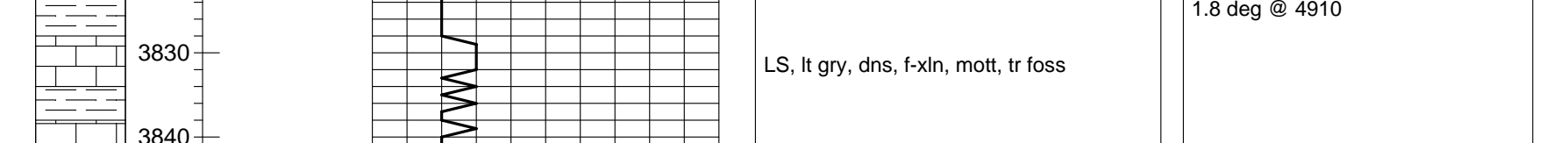
**REFERENCE WELL FOR STRUCTURAL COMPARISON:** Murfin Dring Co. #2-20 Steele 'A'  
2200' FNL & 550' FEL sec. 20-10S-34W, Thomas Co. KS

Daily Progress	Date	Depth	NOI Size	Make	Type	Depth Out	Feet	Hours
	1/16/12	Spud	1 1/2	HTC	RR	278	278	3
	1/17/12	278 WOC	2	7 7/8" Security	M619	3749	3471	52
	1/18/12	1794'	2	7 7/8" HTC	GX22s	4910	1161	54
	1/19/12	2997'	2	7 7/8" HTC	GX22s			
	1/20/12	3895'						
	1/21/12	4095'						
	1/22/12	4420'						
	1/23/12	4597'						
	1/24/12	4738'						
	1/25/12	4910' TD						

**CASING RECORD**  
**SURFACE** 8 5/8" at 278'KB w/200sx  
**PRODUCTION**  
**5 1/2" at 4900'KB w/175 sx**

**ELECTRICAL SURVEYS**  
**Log-Tech** MEL  
**DIL** ONL/CDL BHCS

## LEGEND

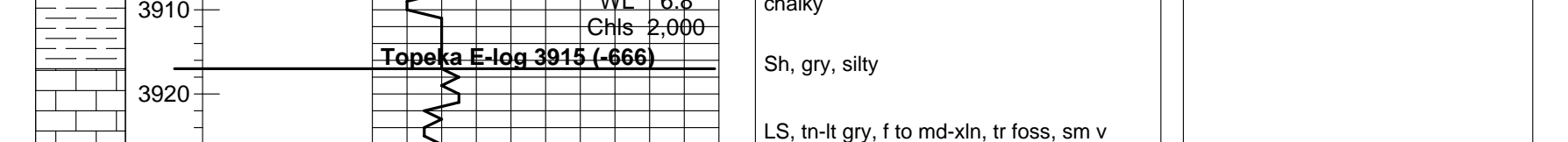


## Remarks And Recommendations:

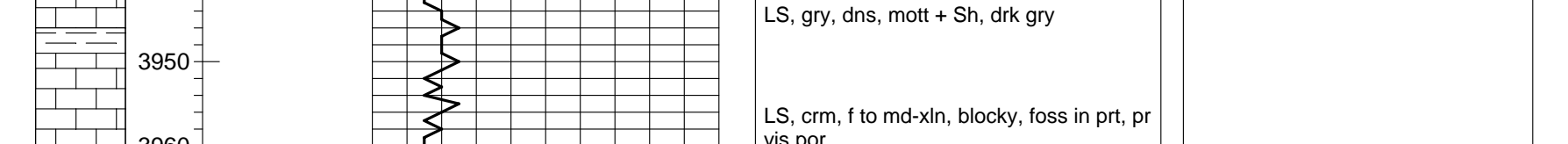
Based upon log analysis, DST recovery, and sample examination, it was recommended that casing be run in the #2-21 Towns 'A' for further testing.

Thomas Funk  
Petrolium Geologist

## DRILLING TIME IN MINUTES PER FOOT



## Lithology



## Sample Descriptions

LS, crm-ht tn, f-xln, v chalky in prt, sm foss frags  
Sh, gry, md-sft, silty  
LS, lt gry, dns, f-xln, mott, tr foss  
LS, tn, crm, f-xln, foss, chalky, sm chty, pr vis por  
Sh, gry & tn, md-sft  
Sh, drk gry & brn, sft  
LS, crm, f-xln, ool in prt, chalky, sct foss, fr int-part por, NS  
Sh, gry, md-sft  
LS, lt gry, dns, v f-xln, mott in prt, sm argill  
LS, tn, f-xln, foss, gran in prt, dolo, sm chalky  
Sh, gry, silty  
LS, tn-ht gry, f to md-xln, tr foss, sm v chalky  
LS, tn, f-xln, foss, sm chalky, tr int-foss por, NS  
LS, gry, dns, mott + Sh, drk gry  
LS, crm, f to md-xln, blocky, foss in prt, pr vis por  
LS, crm-tn, f-xln, foss, tr ool, brittle, pr vis por  
Sh, drk gry, calc  
LS, tn, dns, f-xln, blocky, tr foss, sm chty  
Sh, lt gry, sft  
LS, crm-tn, f to md-xln, sm chalky, sct foss frags, pr vis moldic por, NS  
LS, crm, f-xln, v chalky, sft, tr foss  
Sh, gry  
Stlstn, gry, tn, & rd, v f-grn, mica, sft  
Sh, gry  
LS, tn, crm, f-xln, foss, chalky, dns, pr vis por  
LS, crm-gry, dns, mott, tr foss  
LS, lt gry, dns, f-xln, mott, sm chalky, tr foss  
Sh, blk  
LS, crm, f-xln, ool, sm chalky, sct micro-moldic por, NS  
LS, tn, dns, v f-xln, foss in prt, blocky  
LS, tn, f to md-xln, tr foss, pr int-xln por, NS  
LS, crm-gry, f-xln, mott, tr foss, sft  
Sh, blk, carb  
Sh, gry, tn, & brn, md-grd  
Sh, AA  
LS, crm-in & wht, f-xln, dns, ool in prt, sm chalky, pr vis por, NS  
Sh, tn & gry  
LS, crm-in & wht, f-xln, dns, ool in prt, sm chalky, pr vis por, NS  
LS, AA bec lt gry, mott, tr foss  
Sh, gry  
LS, lt tn, f to md-xln, foss in prt, dns, pr vis por, + Sh, gry  
LS, tn, f-xln, ool in prt, sm gran, dolo, sct int-ool por, NS  
Sh, drk gry  
LS, crm, f-xln, dns, foss, tr ool, chalky, pr vis por, NS  
LS, tn, dns, v f-xln, blocky + Dolo, tn, dns, f-xln, suc, tr foss  
Sh, tn & gry  
LS, tn, f-xln, ool in prt, brittle, dns, tr int-ool por, NSFO, no odor, v sct blk edge str  
LS, crm-wht, f-xln, ool, v chalky, pr vis por, NS  
LS, crm-tn, f to md-xln, tr cht, sct foss frags, chalky in prt  
LS, crm, f-xln, dns, blocky, tr foss  
LS, crm-gry, dns, v f-xln, mott, tr foss  
Sh, blk, carb  
Sh, drk gry & tn, md-sft  
LS, crm, f-xln, foss, brittle, tr ool, pr int-part por, NSFO, no odor, tr sin  
LS, tn, dns, v f-xln, tr foss  
Sh, blk, fiss  
LS, crm, f-xln, micro-ool in prt, brittle, tr int-ool por, NSFO, no odor, v sct edge str  
LS, crm-gry, dns, micro-xln, tr foss  
Sh, gry, tn, and brn, sft  
LS, tn, f-xln, dns, foss in prt, tr ool, pr vis por, NS  
Sh, blk, carb  
LS, tn, crm, f-xln, foss, ool in prt, wfr int-part por, silt to fr sfo, gd odor, sct sat str  
LS, crm-tn, f-xln, ool in prt, sct foss frags, brittle, sct int-part por, SSFO, fr odor, sct sat str  
Sh, blk, carb  
Sh, gry & green, sft + LS, crm-wht, f-xln, v chalky, sft, tr foss, pr vis por, NS  
LS, tn, dns, micro-xln, blocky  
LS, tn, dns, micro-xln, blocky, tr ool  
LS, crm-tn, v f-xln, ool in prt, brittle, no vis por  
Sh, drk gry, silty  
LS, tn, dns, v f-xln, ool in prt, brittle  
Sh, gry, green, & tn, sft  
LS, gry & tn, dns, micro-xln, mott, sm argill  
LS, gry, dns, micro-xln, chty in prt, tr foss  
Sh, drk gry & blk  
LS, tn, dns, micro-xln, mott in prt, tr ool, hrd  
Sh, gry & tn  
LS, tn, dns, crypto-xln, v hrd, tr foss  
LS, lt gry, dns, micro-xln, chty in prt, mott  
LS, drk gry, v dns, micro-xln, mott, argill in prt  
Sh, blk  
LS, tn, dns, f-xln, gran, chty, foss in prt, pr vis por, NSFO, no odor, v silt edge str  
LS, lt gry, dns, micro-xln, chty  
Sh, blk, carb  
LS, crm, f to md-xln, dnsly foss in prt, sm chty, pr vis int-part por, VSSFO, no odor, sct str  
Sh, blk, carb  
LS, tn, dns, v f-xln, blocky, tr ool & foss, hrd, no vis por, NS  
LS, gry, dns, micro-xln, tr foss, hrd  
Sh, blk, carb  
LS, gry, dns, micro-xln, chty in prt  
LS, drk gry, crypto-xln, chty in prt, mott  
LS, AA + Sh, blk  
Sh, gry & blk  
LS, tn, f-xln, foss, chty in prt, brittle, sct fr moldic por, SSFO, fr odor, sct sat str  
LS, tn, dns, micro-xln, foss in prt, sm gry-mott  
LS, lt gry, dns, micro-xln, hrd, tr foss, chty  
Sh, gry  
Sh, vari-color + SS, wht, v f-grn, sb-rd, calc in prt, fna, NS  
SS, wht-gry, v f-grn, sb-ang, well strd, fna, sm argill, NS  
SS, AA + Abt Sh, vari-color, sft  
Sh, gry & green, sft  
Sh, AA + SS, clr, mid to co-grn, sb-ang, pty strd, poly-xln  
SS, AA  
LS, tn, dns, micro-xln, tr foss, sdy in prt, chty  
LS, crm-tn, f-xln, micro-ool, chalky, sdy in prt, hrd  
LS, crm, v f-xln, tr ool, v chalky, sct sd grns  
LS, crm-wht, f-xln, v chalky, sft, tr sd grns, v sct foss  
LS, tn, dns, micro-xln, blocky, tr foss, chty  
LS, tn, brn, dns, micro-xln, chty, hrd  
LS, tn, dns, micro-xln, tr foss, blocky, sm chty  
LS, tn-gry, dns, micro-xln, tr foss, hrd, + Chl, gry, opa, fish

Deviation Surveys:  
0.8 deg @ 278'  
1.2 deg @ 1003'  
0.9 deg @ 2997'  
0.8 deg @ 3749'  
2.2 deg @ 4420'  
1.8 deg @ 4660'  
1.8 deg @ 4910'

Stuck pipe on connection @ 4095'  
Spot 60 bbls of oil, came loose

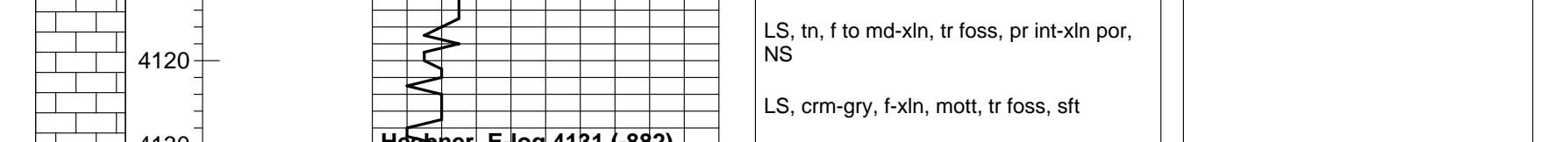
DST #1 4394-4420  
30"-60"-60"-90"  
Blow built to 4 inches on IFP  
Blow built to 3 inches on FFP  
REC:  
90 GIP  
90 HOCM (40%o, 60% m)  
IFP 20-35 ISIP 347  
FFP 37-55 FSP 336  
IHP 2244 FHP 2089  
Temp: 122 deg F

DST #2 4619-4660  
30"-60"-60"-90"  
Blow built to 3 inch on IFP  
Blow built to 1.5 inch on FFP  
REC:  
95 Mud  
IFP 20-35 ISIP 334  
FFP 37-55 FSP 336  
IHP 2303 FHP 2123  
Temp: 128 deg F

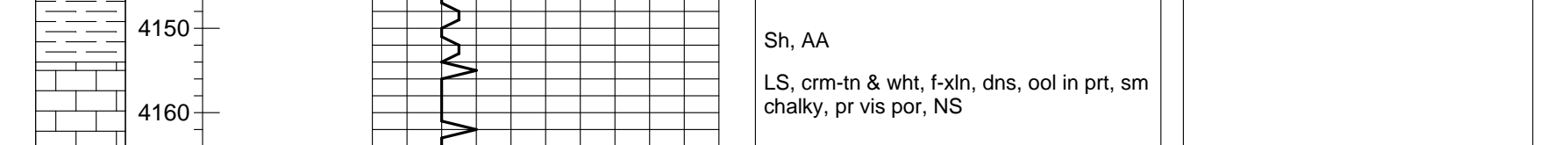
DST #3 4698-4750  
30"-60"-60"-90"  
Blow built to 4 inches on IFP  
Blow built to 9 inches on FFP  
REC:  
70 OCM (30%o, 70% m)  
IFP 36-43 ISIP 461  
FFP 38-58 FSIP 328  
IHP 2385 FHP 2261  
Temp: 122 deg F

TD 4910 @ 7:00 AM 1/25/2012

## DRILLING TIME IN MINUTES PER FOOT



## Lithology



## Sample Descriptions

COMPANY Murfin Drilling Co., Inc  
ELEVATION 3249 KB  
LEASE #2-21 Towns 'A'  
LOCATION 2100' FNL & 335' FWL Sec 21 TWP 10S RGE 34W  
COUNTY Thomas STATE Kansas