

GEOLOGIST'S REPORT

OPERATOR **MURFIN DRILLING CO INC.**

LEASE **ALEX #1-23**

LOCATION **660' FSL 900'FWL**

SEC. **23** TWSP **4S** RGE **31W**

COUNTY **RAWLINS** STATE **KANSAS**

FIELD **WILDCAT**

CONTRACTOR **MURFIN DRILLING CO, INC. RIG NO. 2**

COMMENCED **JULY 4, 2013** COMPLETED **JULY 12, 2013**

MUD DISPLACED **3430** MUD TYPE **CHEMICAL**

DRILLING TIME KEPT FROM **3620** TO **4598**

SAMPLES SAVED FROM **3620** TO **4598**

SAMPLES EXAMINED FROM **3620** TO **4598**

GEOLOGICAL SUPERVISION FROM **3690** TO **4598**

GEOLOGIST ON WELL **STEPHEN J. MILLER**

FORMATION NAME

LOG DATE

FORMATION NAME	TOP	DATE	TOP	SAMPLE DATE
ANHYDRITE	2684	+245	2692	+247
B/ ANHYDRITE	2727	+212	2727	+212
TOPEKA LIME	3760	-821	3758	-819
HEEBNER SHALE	3926	-987	3921	-982
LANISING LIME	3972	-1033	3970	-1031
STARK SHALE	4138	-1199	4137	-1198
UP. PAWNEE LIME	4301	-1362	4301	-1362
CHEROKEE SHALE	4388	-1449	4386	-1447
MISSISSIPPIAN	4504	-1565	4502	-1563
Total Depth	4602	-1663	4598	-1659

ELEVATIONS

KB **2939**

GL **2928**

ALL MEASUREMENTS FROM K.B.

CASING RECORD

Conductor

Surface **8 5/8" @ 225'**

Production **5 1/2" @ 4575'**

ELECTRICAL SURVEYS:

PIONEER

DUAL INDUCTION

COMP NEUTRONS

SONIC LOG

MICROLOG

23

DRILL TIME (MIN/FT)	DEPTH	LITHOLOGY	SHOWS	SAMPLE DESCRIPTIONS	REMARKS
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REMARKS

API 15-153-20926

Drilling Fluids: MORGAN MUD

Drill Stem Testing: TRILOBITE TESTERS

Gas Trailer: NONE

Reserve Pit Chlorides: 2900 ppm

DST #1 3916-3960
30-60-60-90
6 1/2" b/w/8" blow
Rec
317' MCW 80% water
FP 20-94# 102-167#
STP 1280-1266#

DST #2 3960-4004
15-60-15-60
80B 1 7/8" BOB 2"
Rec
20' OMCW 5% oil
248' OMCW 2% oil
1419' OMCW 2% oil
FP 175-508# 546-757#
STP 1296-1283#

DST #3 4004-4044
15-60-15-60
80B 2 7/8" BOB 1 1/2"
Rec
973' GIP
30' G/MCO 55% oil
189' G/MCO 55% oil
630' G/MCO 65% oil
235' G/MCO 35% oil
FP 137-322# 325-459#
STP 1245-1234#

DST #4 4049-4044
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #5 4067-4176
30-60-60-90
80B 6 1/2" BOB 6"
Rec
1260' GIP
126' G Oil 30% oil
306' G Oil 50% oil
118' G OCM 10% oil
FP 26-111# 131-213#
STP 1288-1295#

DST #6 4176-4198
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #7 4198-4212
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #8 4212-4226
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #9 4226-4240
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #10 4240-4254
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #11 4254-4268
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #12 4268-4282
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #13 4282-4296
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #14 4296-4310
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #15 4310-4324
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #16 4324-4338
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #17 4338-4352
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #18 4352-4366
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #19 4366-4380
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #20 4380-4394
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #21 4394-4408
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #22 4408-4422
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #23 4422-4436
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #24 4436-4450
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #25 4450-4464
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #26 4464-4478
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #27 4478-4492
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #28 4492-4506
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #29 4506-4520
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #30 4520-4534
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #31 4534-4548
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #32 4548-4562
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #33 4562-4576
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #34 4576-4590
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #35 4590-4604
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #36 4604-4618
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #37 4618-4632
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #38 4632-4646
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #39 4646-4660
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #40 4660-4674
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #41 4674-4688
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #42 4688-4702
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #43 4702-4716
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #44 4716-4730
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #45 4730-4744
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #46 4744-4758
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #47 4758-4772
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #48 4772-4786
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #49 4786-4800
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #50 4800-4814
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #51 4814-4828
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #52 4828-4842
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #53 4842-4856
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #54 4856-4870
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #55 4870-4884
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #56 4884-4898
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #57 4898-4912
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #58 4912-4926
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #59 4926-4940
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #60 4940-4954
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #61 4954-4968
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #62 4968-4982
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #63 4982-4996
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #64 4996-5010
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #65 5010-5024
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #66 5024-5038
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #67 5038-5052
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #68 5052-5066
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #69 5066-5080
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #70 5080-5094
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #71 5094-5108
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #72 5108-5122
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #73 5122-5136
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #74 5136-5150
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #75 5150-5164
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #76 5164-5178
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #77 5178-5192
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #78 5192-5206
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #79 5206-5220
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #80 5220-5234
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #81 5234-5248
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #82 5248-5262
30-60-30-60
1" blow/ no blow
Rec
5' Mud w/ oil spots
FP 16-23# 25-36#
STP 1244-1186#

DST #83 5262-5276
30-60-30