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GEOLOGIST'S REPORT

OPERATOR MURFIN DRILLING COMPANY, INC.	ELEVATIONS
LEASE PROCHAZKA UNIT #1-22	KB 3340 Ft.
LOCATION 990 FNL & 2520 FEL	GL 3330 Ft.
SEC. 22	TWSP 3S
COUNTY RAWLINS	RGE 36W
FIELD WILDCAT	ALL MEASUREMENTS FROM K.B.
CONTRACTOR Murfin Drilling Company	RIG NO. 14
COMMENCED 26 Sept. 2012	COMPLETED 5 Oct. 2012
MUD DISPLACED 3331	MUD TYPE Chemical
DRILLING TIME KEPT FROM 3550	TO 5042
SAMPLES SAVED FROM 3550	TO 5042
SAMPLES EXAMINED FROM 3542	TO 5042
GEOLOGICAL SUPERVISION FROM 3542	TO 5042
GEOLOGIST ON WELL Paul Gunzelman	

REMARKS

API 15-153-20908-00-00
Drilling Fluids: Morgan Mud, Inc. (David Lines, engineer)
Drill Stem Testing: Trilobite Testing, Inc. (Kevin Mack, tester)
Gas Trailer: No Gas Trailer
Reserve Pit Chlorides: 2,900 ppm.

DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
	3100		STONE CORRAL 3137 (+203)
	3150		BASE/ANHYDRITE 3174 (+166)
	3200		
	3550		9:10 AM, 29 September 2012 Morgan Mud check @ 3552' Vis: 51, Wt: 8.0, WL: 6.0 Chlor: 700 ppm, LCM: 8#
	3600	Sd: Rd-brn, tr lt gn, arg-shly, vvfn-sly, tr calc, intbd lt rd-brn sh. Sd: Wh-crm, vvfn, mica, sli calc, some v.lt gn arg siltst, n/s. Sh: Rd-brn, blky, sly, tr dk gy fis sh. Sd: Lt gy-crm, vvfn-vfn, rd-sbrnd, some lt gy-gn & arg, tr mica & carb mat, n/s. Sd: Rd-brn, tr lt gn, vfln-vvfn sb-fri, some calc & wl cmt, r. mica, much arg-shly. Sd: Rd-brn, vvfn-sly, arg-shly, occ calc, n/s. Sh: Lt rd-brn, v.gum, intbd rd-brn v.arg siltst. Sh: Rd-brn & lt rd-brn, blky, sly-sdy, much gum Sh: Lt rd-brn, blky, gum, some sly, tr brn & tn arg siltst. Sh: Rd-brn, blky, much sly, tr gum, some intbd gy-gn & dk gy fis sh. Ls: Crm, frag-gran, sbchky, ool, cons spr calc, n.v.p, n.s. Ls: Crm, tr lt gy, fxln-frag, ool, cons spr calc, tr sbchky, n.v.p. Sh: Rd-brn & brn, blky, v.sly, some lt gy siltst. Sh: Rd-brn, blky, v.sly-sdy, tr mica, some intbd dk gy fis sh. Sh: Rd-brn, blky, sly-sdy, some gum, tr mica. Sltst: Lt gy & lt gy-gn, smwt arg, tr carb mat, n/s.	NEVA 3658 (-318)
	3650	Ls: Crm, some crm-gy, gran, tr frag, some org rem, occ arg, tr spr calc, n.v.p, n.s. Ls: Crm-lt gy, gran dol, tr org rem & pyr, cons rd-or & rd-brn vit cht, n/s. Sh: Rd-brn, vfn, arg, tr mica, gd intgran por, n/s. Sh: Rd-brn, some brn & tn, vfn-vvfn, arg-shly, tr calc, intbd brn & rd-or sh. Sh: Rd-brn & lt rd-or, blky, sly, tr amor calc, occ gum. Sh: Rd-brn, blky, ea, much sly, some gum. Ls: Crm & v.lt gy, fxln-gran, sli ool, cons clm amor calc, sbchky, rd-or op cht, pr pp por, n/s. Ls: Brn, fxln, some org rem, & ool, tr rd-or op cht, spr calc, occ arg, some intbd dk gy sh, tr gy-brn op pyr cht, n/s. Sh: Crm-gy, fxln, sli foss, occ arg, rd-or & gy mott frs cht, n.v.p.	RED EAGLE 3720 (-380)
	3700		
	3750		
<<CFS>>	3800		FORAKER 3786 (-446)

STOTLER
3946 (-606)

TOPEKA
4044 (-704)

Morgan Mud check @ 4092'
Vis: 49, Wt: 9.0, WL: 6.0
Chlor: 900 ppm, LCM: 6#

HEEBNER SHALE
4195 (-855)

Morgan Mud check @ 4256'
Vis: 69, Wt: 9.0, WL: 6.4
Chlor: 1,100 ppm, LCM: 8#

LANSING
4246 (-906)

DST # 1 4192 - 4256
30°-60°-60°-60°
IF: Weak blow bldg to 2 inches
FF: No Blow
RECOVERY:
20 Ft. Mud
5 Ft. Muddy Water
IHP: 2213 psi. FHP: 2055 psi.
IFP: 16-33 psi. ISIP: 1235 psi.
FFP: 37-49 psi. FSIP: 1212 psi.
BHT: 124 deg. F.

DST # 2 4262 - 4374
30°-60°-60°-90°
IF: Strong blow, BOB in 1 min.
FF: Strong blow, BOB in 5 min.
RECOVERY:
485 Ft. Mud
470 Ft. Water Cut Mud
1290 Ft. Muddy Water
(Chlor: 31,000 ppm)
IHP: 2180 psi. FHP: 2061 psi.
IFP: 386-767 psi. ISIP: 1160 psi.
FFP: 789-1045 psi. FSIP: 1183 psi.
BHT: 134 deg. F.

Morgan Mud check @ 4374'
Vis: 65, Wt: 9.2, WL: 6.0
Chlor: 1,500 ppm, LCM: 10#

STARK SHALE
4461 (-1121)

BASE/KANSAS CITY
4510 (-1170)

Morgan Mud check @ 4705'
Vis: 62, Wt: 9.1, WL: 5.6
Chlor: 1,200 ppm, LCM: 8#

PAWNEE
4639 (-1299)

Morgan Mud check @ 4705'
Vis: 62, Wt: 9.1, WL: 5.6
Chlor: 1,200 ppm, LCM: 8#

CHEROKEE
4712 (-1372)

DST # 3 4622 - 4728
30°-60°-30°-60°
IF: Weak 3/4 inch blow
FF: No blow
RECOVERY:
1 FT. Clear Oil
470 Ft. Oil Cut Mud
(5% Oil, 95% Mud)
IHP: 2342 psi. FHP: 2315 psi.
IFP: 24-30 psi. ISIP: 714 psi.
FFP: 32-36 psi. FSIP: 360 psi.
BHT: 126 deg. F.

Morgan Mud check @ 4863'
Vis: 64, Wt: 9.1, WL: 6.0
Chlor: 1,200 ppm, LCM: 6#

MISSISSIPPAN
4922 (-1582)

TOTAL DEPTH
5042 (-1702)

5:55 pm, 4 October 2012