GEOLOGICAL REPORT

DRILLING TIME API 15-167-23232-00-00

COMPANY Mai Oil Operations
LEASE Eulert Unit No. 1
LOCATION 1300' FNL & 1940' FWL
SECTION 4 TOWNSHIP 12S RANGE 15W
COUNTY Russell STATE Kansas
POOL W.C.

CONTRACTOR Murfin Drlg. Rig 16
COMMENCED 11-7-03
COMPLETED 11-15-03
RTD 3215' LTD 3215'
MUD Andy's Mud / Chemical (Chem)
SAMPLES SAVED FROM 2100 TO 3215 RTD
DRILLING TIME FROM 2100 TO 3215 RTD
SUPERVISION FROM 2200 TO 3215 RTD
GEOLOGIST Todd E. Morgenstern 11/15/03

SAMPLE LOG

ELEVATIONS
KB 1686'
DF 1683'
GL 1681'
MEASUREMENTS FROM 1686' KB

CASING
8 5/8" @ 236 w/ 350 sx

ELECTRICAL SURVEYS
Eli Wireline Inc
Rag Sonic

DRILL STEM TESTS
Trilobite Testing
7 Tests
Johnson Service Tests

FORMATION TOPS & STRUCTURAL POSITION

FORMATION	SAMPLE	E. LOG	DATUM	A	B	C	D
Anhydrite		754	+932				
Base Anh.		790	+896				
Grand Haven	2246	2244	-558				
1st Tarkio	2262	2262	-576				
Dover	2281	2280	-594				
Langdon Sh.							
Tarkio Lime	2319	2318	-632				
Billard							
Topeka	2570	2568	-882				
Heebner	2787	2786	-1100				
Lansing	2839	2838	-1152				
Bkc	3095	3095	-1402				
Arbuckle	3149	3152	-1460				
TD	3215	3215	-1526				

REFERENCE WELLS
A
B
C
D

RECEIVED
DEC 23 2003
KCC WICHITA

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REMARKS

LEGEND

Anhydrite | Salt | Sandstone | Shale | Carb sh | Limestone | Ool.Lime | Chert | Dolomite

SCALE " = 100'

MORROW

DEPTH	Lithology	DST's	DRILLING TIME – Minutes Per Foot Rate of Penetration Decreases	SAMPLE DESCRIPTIONS	REMARKS
2100					
2200				Ls. Gry. Ds. Fnxln w/p vis ø	
				Ls. AA.	
				Sh. Gry & Rd. Gummy	
				Grand Haven Ls. Gry. Fnxln, Chalky, w/ p vis ø	Grand Haven 2246 (-560)
			1st Sand 2262 (-576)	Sh. Rd Silty, Gry Sh.	
				Ss. Gry Fn Grn, Mica, Fri. w NSO. F vis. ø	
			Dover Lime 2281 (-595)	Ls. Gry. Ds. Xln.	
				Sh. Gry. Rd. w/ mica. ss. AA.	
2300				Sh. AA. NS.	
				Blk. & Gry Sh. Rare Mica ss NSO (Gummy)	
					Tarkio Lime 2319 (-633)
				Ls. Tan. Buff. Fnxln Dse. Sli Chalky	
				Ls. Tan. Buff, Fnxln AA	
				Ls. AA. Sh. Gry.	
				Ss. Gry. Fn-Med Grn Mica well sort Fri. F vis ø NSO	
				AA. Sh. Gry. Ss. Gry Fri. Micro.	
					Elmont 2382
				Ls. Gry, Tan. Ds. Very Fn xln	
2400				Ls. Gry & Tan. AA. Sh. Gry Silty.	
				Ls. & Sh. AA	
				Ls. Tan. Gry. Dse, xln	
				Sh. Gry & Drk Gry	
				Sh. AA.	
2500					
				Ls. Gry Tan. Ds, Fn xln Cht w/ p vis ø	
					Howard 2538 (-852)
				Ls. Gry Tan Fnxln Dse Chalky, p NS.	
				Ls. AA.	
					Topeka 2570 (-884)
				Ls Tan & Lt. Brn Fnxln, Dse w/ Rare, Rupt. ø F-Brn Stn & Sat. Vsso, Lt. Odor.	
				Ls. Tan, Buff Fn xln Dse.	
2600				Ls. Buff Tan. Dse. Fn xln sli Chalky. Foss. ip w/ ? tr. Dead Stn. NSFO.	
				Ls. AA. AA Sh. Rd.	
				Ls. Tan. Wht. Vfnxln, sli Foss Chalky ip w/ p vis. ø NSO	
				Ls. AA. Tan. Brn xln. Foss.	
				Ls. Tan. Wht. Gry Fnxln ool / Foss AA. NSO Chalky.	
			King Hill Sh 2650 (-964)	Blk. Carb Fiss. Sh.	
				Ls. Crm & Buff Fn xln Dse Foss in part. NS.	
				Ls. Buff. Crm. Fn xln Dse AA Chalky NSO.	
				Ls. Gry. Buff Fn xln Chalky Foss ip w/ p vis. ø w/ wht Δ	DST No. 1 (Top) 2705-2766 45-45-45-60 IF: WK - 4in blow FF: WK Surf blow
				Ls. Gry. Wht. AA. Chalky & Δ w/ p vis ø NS.	Rec. 140' Drlg. Mud w/ oil spots
2700				Ls. Gry & Wht. AA. Wht. Dse Δ Ls.	IHP: 1349 IFP: 12-56 ISIP: 773 FFP: 60-78 FSIP: 757 FHP: 1300
			Queen Hill Sh 2710 (-1024)	Blk Carb Fiss. Sh.	
				Ls. Buff & Lt Brn. Fnxln. Foss w/ F vis inter xln ø and Foss pnpt. ø. Lt. Brn Stn & Sat. Fsfo. F odor.	Temp: 92° Chlor: 5000 ppm Sys
				Ls. Gry & Buff Fn xln Dse Chalky w/ Rare Stn. Sli Sh.	
				Ls. AA. Gry Dse Sli Chalky NS.	
				Ls. Gry & Crm Vfnxln, Chalky w/ p vis ø. F spot stn vsso on break Lt. odor.	
				Ls. Gry Fn xln Chalky.	
				Ls. AA	
					Heebner 2787 (-1101)
				Blk. Carb Fiss. Sh.	
				Ls. Brn. Buff Dse.	
2800				Sli Gry - Vc. Silty Ls. Dse.	
					Toronto 2817 (-1121)
				Ls. Crm. & Tan Ds. Vfnxln Chalky w/ tr. scat. stn. vsso on break p vis. ø Lt. odor.	
			Douglas Sh 2823 (-1137)	Sh. Gry Silty, Ls. AA.	
					Lansing 2839 (-1153)
				Ls. Crm. Gry. Vfnxln Dse. Sli. Foss. w/ p vis. ø Rare spot stn Fr. odor. Chalky.	
				Ls. Crm. Buff Fnxln Dse. w/ p vis Pinpt. ø Tite w/ sli stn. & fo on break. NSFO Fr. odor. Sli Gry	DST No. 2 2843-2874 45-45-45-60 IF: WK to Fair 6" FF: WK to 3"
				Sh. Gry. (Gummy) Ls. AA.	Rec. 192' MSW
				Ls. Tan & Crm Fnxln sli Foss & ool. Pinpt ø F stn vssfo on break. Lt. odor.	IHP: 1429 IFP: 19-81 ISIP: 282 FFP: 83-103 FSIP: 282 FHP: 1402
				Ls. Crm & Tan. Fnxln sli Foss & ool w/ F inter xln & ph ø sli stn. Bleeds Gas, Vsso F odor	Temp: 94° Chlor: 100,000 5000 gr.
				Ls. AA. Dse. Xln.	
2900				Sh. Gry & Blk	
				Ls. Crm & Buff, Fn xln sli Foss.	DST No. 3 2877-2898 30-30-30-30 IF: WK Surf Blow FF: No Blow
				Ls. Fnxln. AA w/ Fso & pinpt odor.	Rec. 10' WM
				Ls. Tan & Crm. sli Foss. & ool w/ p vis ø tr. stn. AA.	IHP: 1431 IFP: 10-17 ISIP: 302 FFP: 17-21 FSIP: 282 FHP: 1389
				Ls. Tan & Buff Dse. Fnxln. w/ Buff Δ, w/ Rare ø sli pnpt. vs stn sli sfo, Lt. odor. Chalky.	
				Ls. Tan. Buff Vfnxln ool / ooc w/ F-vis. inter ool ø scat. stn & sat. w/ Gsfo on break. Gassy	Temp 88° Chlor NA 6,000 sys
				Ls. Tan Buff. Dse. ool. Δ, ip. ss AA. Chalky	
				Ls. Tan. Buff wht. Fnxln Dse Chalky, Δ ip w/ p vis. ø NSO.	DST No. 4 2894-2940 45-45-45-60 IF: WK - 9" Blow FF: WK - 4" Blow
				Ls. AA. Wht. Chalk. NSO	Rec. 224' MSW
				Ls. Tan & Gry. Fnxln Dse sli Foss. ool. w/ p vis ø Chy ip w/ NSO.	IHP: 1445 IFP: 16-90 ISIP: 289 FFP: 91-118 FSIP: 287 FHP: 1403
				Ls. AA. Dse. Sh. Gry & Blk.	Temp. 93°
				Blk & Gry Sh.	
3000				Ls. Tan, Crm. Dse. Fnxln sli ool w/ p vis ø NSO.	Chlor 50,000 Rec. 6,000 Sys.
				Sh. Gry. Blk.	
				Ls. Tan. Gry Dse xln sli Foss Chalky w/ NSO	DST No. 5 (Arb) 3109-3156 30-30-30-30 IF: WK - Dead in 20 min FF: No Blow
				Ls. Buff & Tan. Vfnxln Dse sli ool & Foss w/ p vis ø sli Chalky w/ NSO.	Rec. 5' Drlg Mud w/ oil spots
				Blk. Fiss. Sh. Ls. Dse. AA. Δ ip	IHP 1585 IFP 17-22 ISIP 63 FFP 21-22 FSIP 43 FHP 1550
				Ls. Tan. Buff Dse Vfnxln w/ No ø. sli Chalky. Tr. stn.	Temp 92°
				Ls. Tan. Brn. ool, Fnxln. w/ p vis. inter ool ø, Chalky ip. w/ vsso. Lt. odor.	
				Ls. Tan. Gry & Crm. Fnxln Dse ool Chalky AA. Tr. stn.	
				Ls. Tan & Gry Dc. Fnxln Chalky sli ool AA.	
				Ls. Gry & Buff Fnxln Dse. Chalky sli ool AA. NSO. No vis ø.	Base K.C. 3095 (-1409)
3100				Ls. AA. Buff Fnxln AA. some Blk. sh.	DST No. 6 (Arb) 3152-3165 45-45-20-0 IF: WK - 8" Blow FF: Lost Packer seat in 20 min.
				Ls. AA. Dse. sli Δ Chalky	Rec. 410' WCM w/ oil spots
				Vc. sh. Ls. Chalky Dse. AA sli Foss., w. Ad. Silty NS.	IHP: 1638 Chlor IFP: 19-84 25,000 ppm ISIP: 1092 FFP: 84-107 FSIP: — FHP: 1529 Temp 96°
				Sh. Rd, Vc. Soft, Gummy, Wash. Rd	
				Ls. Wh. Tan. Dse. Vfnxln. w/ p vis. ø NS. sli Chalky.	
				Ls. & Wht. Sh.	
				Ls. AA. Wh. Dse. sli Δ, Chalky ip	Arbuckle 3149 (-1463)
				Dolo. Gry, Tan, Brn Fn-Med xln w/ sli pinpt. vug ø, Drk stn & sat. w/ Gsfo good odor.	DST No. 7 Arb 3158-3165 45-45-45-60 IF: WK - 5" Blow FF: WK - 5" Blow
				Dolo. Tan. Brn. Fnxln sli sucr. w/ Fso p vis. inter xln ø F stn. Fair odor	Rec. 195' MSW w/ few oil spots
				Dolo. Tan. Gry & Brn med xln w/ F-G vis inter xln & pnpt. ø F-Gsfo Gstn good odor.	IHP: 1603 IFP: 10-76 ISIP: 1093 FFP: 78-107 FSIP: 1094 FHP: 1542 Temp 102°
				Dolo. Tan. Brn. F-C xln. sli Rhomb w/ F vis ø	
				Dolo. AA. w/ wht. Δ	
3200				? Dolo. AA. Δ	
				RTD 3215' (-1529)	