GEOLOGIC REPORT

DRILLING TIME AND SAMPLE LOG

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OPERATOR	Chesapeake Operating, Inc.
LEASE	Knight Farms 31-2
LOCATION	1372' FNL 1381' FEL
	Section 31 T1N R4E
COUNTY	Stephens STATE OK
API #	35-137-29611-00-00
ELEVATION	KB: 1070' DF: GL: 1045'
SPUD	10/5/2011
TD	10/12/2011
CASING	9-5/8" @ 1000' w/ 350 sxs
	5-1/2" @ 5000' w/ 200 sxs
ELECTRICAL	Schlumberger Dual Induction, Compensated Neutron, Spectral Density, Dual Spaced Neutron
GEOLOGICAL SUPERVISION	PRIEST, TIM
DRILLING TIME START TRACK	4000' IN RED
DRILLING TIME START FINAL	4000' IN RED
SAMPLE LOG START TRACK	4000' IN RED
SAMPLE LOG START FINAL	4000' IN RED
DRILLING TIME	1 MIN/FOOT
SAMPLE LOG	30' PER FOOT
DRILLING FLUID	Water Gel / Lime
	Drilling Mud: 4,000' - TD
	Mud Type: Chemical
	Mud Weight: 9.0 - 9.4
	Viscosity: 40 - 50
	Water Loss: NA
	Chlorides: 1,000 - 2,000
	Ph: 9.0 - 10.0
	Calcium: 100 - 200
	Gel: 10 - 20
	Solids: 4 - 6
	Sand: Trace
	Oil: 0
	Flow Line Temp: 80 - 90
	Bottom Hole Temp: 100 - 110
	Mud Engineer: Various
	Mud Company: Various
	Mud Type: Fresh Water Gel
	Mud Weight: 8.6 - 8.9
	Viscosity: 28 - 32
	Water Loss: NA
	Chlorides: 0 - 100
	Ph: 7.0 - 8.0
	Calcium: 0 - 20
	Gel: 0 - 5
	Solids: 0 - 2
	Sand: Trace
	Oil: 0
	Flow Line Temp: 80 - 90
	Bottom Hole Temp: 100 - 110
	Mud Engineer: Various
	Mud Company: Various
	Mud Type: Chemical
	Mud Weight: 9.0 - 9.4
	Viscosity: 40 - 50
	Water Loss: NA
	Chlorides: 1,000 - 2,000
	Ph: 9.0 - 10.0
	Calcium: 100 - 200
	Gel: 10 - 20
	Solids: 4 - 6
	Sand: Trace
	Oil: 0
	Flow Line Temp: 80 - 90
	Bottom Hole Temp: 100 - 110
	Mud Engineer: Various
	Mud Company: Various
	Mud Type: Fresh Water Gel
	Mud Weight: 8.6 - 8.9
	Viscosity: 28 - 32
	Water Loss: NA
	Chlorides: 0 - 100
	Ph: 7.0 - 8.0
	Calcium: 0 - 20
	Gel: 0 - 5
	Solids: 0 - 2
	Sand: Trace
	Oil: 0
	Flow Line Temp: 80 - 90
	Bottom Hole Temp: 100 - 110
	Mud Engineer: Various
	Mud Company: Various
FORMATION TOPS	ELECTRICAL LOG
Arbuckle	3950(-2880)
Reagan Sandstone	
Granite Wash	
Marble City	
Sycamore	
Hunton	
Bromide	
Tyner	
Oil Creek	
Viola	
Simpson	
Connerville	

REMARKS

Respectfully Submitted,

API #35-137-29611-00-00

Tim Priest
Petroleum Geologist

LEGEND

Drilling Time | Gas | Sample Shows | Lithology | Cuttings | Oil | Drilling Breaks

DRILLING TIME IN MINUTES PER FOOT
Max Penetration 10 MPF

DEPTH	DRILLING TIME IN MINUTES PER FOOT	SAMPLE DESCRIPTION	REMARKS
			Arbuckle 3950(-2880)
3000			Reagan Sandstone 3970(-2900)
50		Lx cm-tan-lt gry, vfn sd, dnse	
4100		Ls/Dol cm-lt gry, fn sd, foss, sbangl, sbrndd, sdsrt, hard mag, sxrx, pp sd, NFO Ls gy, vfn sd, dnse	
50		Sltst red-gry, sl sandy Sh dk gry, soft	
4200		Ls/Dol cm-lt gry, fn sd, chby, pd int sd pp, NS	
50		Ls cm-lt gry, fn sd, foss, chby, dnse Ls cm, fn sd, foss, chby, p-f int sd pp, NS	
4300		Sh gry, silty Ls cm-tan, fn sd, dnse Sh gry, silty	
50		Ls gry, vfn sd, dnse Sh gry, silty Ls cm, fn sd, foss, chby, dnse Sh red-gry, silty Ls gry, vfn sd, dnse	
4400		Sh gry, silty Ls gry, vfn sd, dnse Sh gry, silty Ls cm, fn sd, foss, chby, dnse Sh red-gry, silty Ls cm-tan, vfn sd, dnse	Viola 4100 (-3030)
50		Sh blk, carb Sh red-gry, silty, calc in part	Simpson 4240 (-3170)
4500		Ls cm-lt gry, fn sd, foss, p-f int sd pp, pp sd, spdrd sd stn, dull fluor, SDFO (heavy), no odor, no fluor	Lansing 4242 (-3195)
50		Ls gy-gry, calc	DST # 1: 4244'-4300' 30/30/30/30 Open Flow: 1st: Weak blow, 2nd: Weak blow, Rec: 10' Mud, IFP: 0, ISIP: 0, FFP: 0, FSIP: 0
4600		Ls cm-lt gry, fn sd, foss-sd, p-f int sd pp, spdrd sd stn, dull fluor, SDFO (heavy), no odor, no fluor Ls cm-lt gry, fn sd, foss, sd chby, p-f int sd pp, spdrd sd stn, dull fluor, SDFO (heavy), no odor, no fluor Ls cm-lt gry, fn sd, foss, sd chby, p-f int sd pp, spdrd sd stn, dull fluor, SDFO (heavy), no odor, no fluor	Top Log @ 4244' Top Drill Stem Test
50		Sh red-brn-gry, calc Ls cm-lt gry, fn sd, chby, dnse	
4700		Sh gr-gray Ls cm-lt gry, fn sd, foss-sd, p-f int sd pp, spdrd sd stn, dull fluor, SDFO, no odor, no fluor Ls tan-gry mottd, fn sd, dnse	Mississippian 4300 (-3230)
50		Sh blk, carb Sh red-brn-gry, calc Ls cm-lt gry, fn sd, foss, chby, p-f int sd pp, pp sd, spdrd sd stn, SDFO, no odor, no fluor	Mississippian 4320 (-3250)
4800		Sh blk, carb Sh red-brn-gry, calc Ls cm-lt gry, fn sd, foss, chby, p-f int sd pp, pp sd, spdrd sd stn, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor	DST # 2: 4300'-4320' 30/30/30/30 Open Flow: 1st: Weak blow, 2nd: Weak blow, Rec: 10' Mud, IFP: 0, ISIP: 0, FFP: 0, FSIP: 0
50		Sh blk, carb Sh red-brn-gry, calc Ls cm-lt gry, fn sd, foss, chby, p-f int sd pp, pp sd, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor	Mississippian 4400 (-3330)
4900		Sh blk, carb Sh red-brn-gry, calc Ls cm-lt gry, fn sd, foss, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm-lt gry, fn sd, foss-sd, chby, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor	Huntonville 4450 (-3380)
50		Sh blk, carb Sh var col Ls cm-lt gry, vfn sd, foss, chby, dnse Ls cm, sst, sd chby, p-f int sd pp, NS Sh var col Ls cm-tan, fn sd, sst, p-f int sd pp, spdrd sd stn, VSDFO, v sl odor, dull fluor Sh lt gn-gry	Chattanooga 4500 (-3430)
5000		Sh dk gry-blk Ls cm, fn sd, sst, dnse Sh dk gry-blk Ls tan-gry, vfn sd, sst, dnse Sh gr-gray Ls cm-lt gry, vfn sd, foss, p-f int sd pp, pp sd, spdrd sd stn, SDFO, v sl odor, dull fluor Sh gr-gray-dk gry Ls cm-lt gry, fn sd, foss, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Sh gr-gray-dk gry Ls cm-lt gry, fn sd, foss-sd, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Sh gr-gray-dk gry Ls tan-gry, vfn sd, sst	Chattanooga 4550 (-3480)
50		Ls cm-lt gry, vfn sd, sst chby, dnse Ls lt gry-gry, vfn sd, v chby, dnse Ls cm-lt gry, fn sd, foss-sd, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm, vfn sd, dnse Sh blk, carb Ls tan-gry, vfn sd, chby, dnse Ls cm-lt gry, fn sd, foss, p-f int sd pp, spdrd sd stn, SDFO, v sl odor, dull fluor Ls cm, vfn sd, dnse Sh blk, carb Ls tan-gry, vfn sd, chby, dnse Ls cm-lt gry, vfn sd, foss, chby, p-f int sd pp, pp sd, SDFO, no odor, dull fluor Ls cm-lt gry, vfn sd, foss, chby, dnse Sh blk, carb Ls tan-gry, vfn sd, chby, dnse Ls cm-lt gry, fn sd, foss, chby, p-f int sd pp, pp sd, spdrd sd stn, SDFO, v sl