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Petroleum Geologist
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GEOLOGY REPORT
DRILLING AND SAMPLE LOG

LEASE: **Shell Federal**
LOCATION: **SE/4 Sec.13 T5N R64W**
COUNTY: **Weld County, Colorado**
API No. **05-123-24188**
OPERATOR: **Shell Exploration & Production Co.**
CONTRACTOR: **Sun Drilling Co. Rig #4**
SPUD: **3-13-78** COMPL.: **3-23-78**
TOTAL DEPTH: **6400'** PBTD: **NONE**
ELEV. GR: **4487'** DF: **4500'** KB: **4506'**
MAIN HOLE: **7 7/8" Hole to 6400'**
CASING: **8 5/8" @ 224'**
DRILLING TIME START FROM: **2000'** IN RED
DRILLING TIME STOP FROM: **6300'** IN RED
GEOLOGICAL SUPERVISION FROM: **2000'** RTD
GEOLOGICAL SUPERVISION FROM: **6300'** RTD
FORMATION TOPS: **ELECTRICAL LOG**
DRILL STEM TESTS: **NONE**
CORE DATA: **NONE**
ELECTRICAL LOGS: **DIL, FDC, CNL, GR, CAL**
SAMPLE: **No Samples Taken**

REMARKS:

Respectfully Submitted,

API #05-123-24188 (SE/SE)

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LEGEND

DRILLING TIME IN MINUTES PER 5 FOOT
Hard Penetration Soft

DEPTH	DRILLING TIME	SAMPLE DESCRIPTION	REMARKS
2200		La tan-gry, tr oil, foss, f cnt vfr-sn, NS	Anhydrite 2220(+1991)
50		La cm-tan, vfr-vtl, drse	Base Anhydrite 2240(+1991)
2300		La tan-gry, tr oil, foss, f cnt vfr-sn, NS Sh red-gry	Trip chge. @ 2302' 3 hr. drlg to break.
50		Sh gry	
2400		Sh blk, carb	
50		La cm-tan, fr oil, foss, drse	
2500		La cm-tan, fr oil, sch, pf cnt vfr-mt cnt poor, NS	
50		Sh gry-dk gry	
2600		La cm-lt gry, fr oil, foss, drse	
50		Sh blk	
2700		La cm, fr oil, foss cnt, chky, f vfr-sh pcp poor, NS	
50		La cm, fr oil, foss cnt, chky, f vfr-sh pcp poor, NS	
2800		La cm-lt gry, fr oil, sch f mt vfr-mt poor, NS Sh gry blk	Heebner 2820 (-1945)
50		La cm-tan, fr oil, foss, arg	
2900		Sh blk, carb La cm-tan, vfr-vtl, drse	Toronto 2840 (-1965)
50		Sh gry-gry, calc	
3000		La cm, fr oil, foss, sh chky, sl sdy, f vfr-sh pcp poor, NS Sh gry-gry	Lansing 3027 (-1521)
50		La tan, fr oil, sst, f mt cnt-vfr-sh poor, NS	
3100		La cm-gry, mic vtl, drse	
3200		La cm, fr oil, foss, chky, drse	
50		Sh gry-gry	
3300		La cm-lt gry, vfr-vtl, drse	
50		La cm, fr oil, vf foss, v chky, fm vs por	
3400		La cm-lt gry, mic vtl, drse	
50		La cm-lt gry, fr oil, foss, chky, sl sdy, f vfr-sh pcp poor, NS Sh red-gry-gn, calc	
3500		La cm-tan, vfr-vtl, drse	
50		Sh gry-gry	
3600		La cm-lt gry, fr oil, dsts in pt foss, chky, p vtl-sh pcp poor, NS	
50		Sh gry	
3700		La cm-tan, fr oil, vsl, f-pt cnt sh kcd poor, NS	
50		La cm-gry, mic vtl, drse	Muncie Creek 4027 (-1521)
3800		Sh blk, carb La cm-tan, vfr-vtl, foss, drse	
50		Sh gry-dk gry, calc La cm-lt gry, mic vtl, drse	
3900		La cm-lt gry, vfr-vtl, foss, drse Sh gry-dk gry, calc	
50		La cm-lt gry, mic vtl, drse	
4000		La cm-lt gry, fr oil, sh vtl, sl chky, pf cnt pcp poor, NS Sh red-gry-gn	**DST # 1** 4000' - 4050' Tool open 1 hr. Rec. 5' mud. IFP 0 psi FFP 0 psi. Hydro. 2000 psi. Temp. 120 deg. Fahr.
4050		La cm-lt gry, fr oil, foss, chky, sl sdy, pf cnt pcp poor, NS Sh gry-blk La cm-lt gry, vfr-vtl, sl foss, sl chky, drse Sh red-gry-gn	
4100		La cm-lt gry, fr oil, foss, chky, sl sdy, pf cnt pcp poor, NS Sh gry-blk La cm-lt gry, mic vtl, drse	Dark Shale 4114 (-1521)
4150		Sh blk, carb La cm-tan, fr oil, foss, chky, f cnt vtl-sp pcp, spl cut and fluor, SPFL f odor, dull fluor	**DST # 2** 4150' - 4200' Tool open 1 hr. Rec. 5' mud. IFP 0 psi FFP 0 psi. Hydro. 2000 psi. Temp. 120 deg. Fahr.
4200		La cm-gry, vfr-vtl, drse La cm-lt gry, vfr-vtl, chky, drse	Hushpuckney 4192 (-1521)
4250		La cm-lt gry, fr oil, sch, chky, f cnt vtl-sp, spl cut and fluor, SPFL f odor, no fluor La cm-gry, vfr-vtl, drse	
4300		La cm-tan, fr oil, chky, arg in sh	
4350		La cm-tan, fr oil, chky, arg in sh Sh red-gry-gn	**DST # 3** 4350' - 4400' Tool open 1 hr. Rec. 5' mud. IFP 0 psi FFP 0 psi. Hydro. 2000 psi. Temp. 120 deg. Fahr.
4400		La cm-tan, vfr-vtl, chky, drse Sh var col, silty	Marmaton 4400 (-1521)
4450		La cm-lt gry, mic vtl, chky, drse La cm-gry, vfr-vtl, chky, drse Sh gy blk	
4500		La cm-gry, vfr-vtl, chky, drse Sh gry-gn La cm-gry, vfr-vtl, chky, drse Sh gry-gn-red	
4550		La cm-gry, mic vtl, foss, drse Sh gr-gry La cm-tan, mic vtl, foss, drse	
4600		La cm-tan, vfr-vtl, foss Sh blk, carb	
4650		La cm-lt gry, vfr-vtl, chky, sl sdy, sl foss, drse Sh var col, silty	Pawnee 4727 (-1521)
4700		La cm-gry, mic vtl, drse La cm-gry, vfr-vtl, chky, drse Sh gy blk	
4750		La cm-gry, vfr-vtl, chky, drse Sh gy-gn-red	Myers Station 4768 (-1521)
4800		La cm-gry, vfr-vtl, foss Sh blk, carb	Fort Scott 4875 (-1521)
4850		La cm-tan-gry, vfr-vtl, sl sdy, sl foss, chky, f cnt vtl-sp, spl cut and fluor, SPFL f odor, dull fluor Sh blk, carb	**DST # 4** 4850' - 4900' Tool open 1 hr. Rec. 5' mud. IFP 0 psi FFP 0 psi. Hydro. 2000 psi. Temp. 120 deg. Fahr.
4900		La cm-tan, vfr-vtl, foss, chky, drse Sh gy blk La cm-tan, vfr-vtl, chky, drse Sh gy-gn	Cherokee Shale 4940 (-1521)
4950		La cm-tan, vfr-vtl, foss, chky, drse Sh blk, carb La tan-gry modd, mic vtl, drse Sh gy-gn La tan-gry, vfr-vtl, chky, drse Sh blk, carb Sh blk, carb, wnd bed Lo gry, vfr-vtl, drse La cm-tan, vfr-vtl, drse	Atoka Shale 5147 (-1521)
5000		La cm-tan-gry, vfr-vtl, sl sdy, f cnt vtl-sp, spl cut and fluor, SPFL f odor, dull fluor La cm-tan-gry, vfr-vtl, sl sdy, pf cnt vtl-sp, spl cut and fluor, SPFL f odor, dull fluor Sh gy-blk Sh red, wh-cmed gry-gn, sdy SS	**DST # 5** 5000' - 5050' Tool open 1 hr. Rec. 5' mud. IFP 0 psi FFP 0 psi. Hydro. 2000 psi. Temp. 120 deg. Fahr.
5050		Sh clear-wh, fn-mod grn, fsp cement, sl frable, NS	Morrow 5480 (-1521)
5100		La cm-tan-gry, vfr-vtl, sandy, chky, drse Sh gy	Mississippian 5560 (-1521)
5150		La cm-gry, vfr-vtl, sandy, chky, drse	
5200		La cm-lt gry, vfr-vtl, sandy, chky, drse	
5250		La cm-lt gry, vfr-vtl, chky, drse La cm-lt gry, vfr-vtl, chky, drse	Total Depth 6400 (-1521)
5300			
5350			
5400			
5450			
5500			
5550			
5600			
5650			
5700			
5750			
5800			
5850			
5900			
5950			
6000			