

**Darrah Oil Company, LLC
Knopp No. 9-13
1155' FNL and 2475' FEL
SW SW NW NE
Sec 13 T14S R32W
Logan County, Kansas**

**Geological Report
by**

Macklin M. Armstrong

Scale 1:240 Imperial

Well Name:	Knopp No. 9-13	
Surface Location:	Sec 13 T14S R32W	
Bottom Location:	1155' FNL and 2475' FEL	
API:	15-109-21636	
License Number:	35615	
Spud Date:	7/11/2022	Time: 7:00 AM
Region:	Logan County, Kansas	
Drilling Completed:	7/18/2022	Time: 7:02 PM
Surface Coordinates:	197512 & 1195208	
Bottom Hole Coordinates:	197512 & 1195208	
Ground Elevation:	2815.00ft	
K.B. Elevation:	2824.00ft	
Logged Interval:	3400.00ft	To: 4674.00ft
Total Depth:	4665.00ft	
Formation:	Mississippi	
Drilling Fluid Type:	Chemical/Fresh Water Gel	

OPERATOR

Company:	Darrah Oil Company, LLC	
Address:	125 N Market, Suite 1015 Wichita, Kansas 67202	
Contact Geologist:	John Hastings	
Contact Phone Nbr:	316-219-3390	
Well Name:	Knopp No. 9-13	
Location:	Sec 13 T14S R32W	
API:	15-109-21636	
Pool:	Oil	Field: Bridges Northeast

State: Kansas

Country: USA

CONTRACTOR

Contractor:	Duke Drilling Company		
Rig #:	4		
Rig Type:	mud rotary		
Spud Date:	7/11/2022	Time:	7:00 AM
TD Date:	7/18/2022	Time:	7:02 PM
Rig Release:	7/19/2022	Time:	11:30 PM

SURFACE CO-ORDINATES

Well Type:	Vertical
Longitude:	-100.825843
Latitude:	38.84117
N/S Co-ord:	197512
E/W Co-ord:	1195208

ELEVATIONS

K.B. Elevation:	2824.00ft	Ground Elevation:	2815.00ft
K.B. to Ground:	9.00ft		

NOTES

Date	Depth at 7 am	Activity
7-11-22	MIRU	Spud at 7:00 am
7-12-22	1200	Drilling
7-13-22	2580	Drilling
7-14-22	3375	GIH with New Bit
7-15-22	3853	Drilling
7-16-22	4140	Drilling
7-17-22	4420	Drilling
7-18-22	4486	CFS
7-19-22	4665	Logging
7-20-22	4665	P & A

Surface Casing: 8 5/8" 20# at 232'
 Production Casing: None set

Deviation: 232' - 1/2°
 2316' - 1/2°
 3375' - 1/2°
 4458' - 1/4°
 4665' - 1 1/4°

Bit Record:	Make	Size	Type	Depth In	Depth Out	Hours
	JZ	12 1/4"	PL619	Surface	232	1
	JZ	7 7/8"	PTL616	232	3375	39 1/2
	JZ	7 7/8"	HA527	3375	4665	65 3/4

Drill Stem Tests:

DST No. 1 4410 to 4458 Johnson Zone
 30-30-30-30
 Recovery: 5' Mud
 IHP 2310 FHP 2199
 IFP 31-32 FFP 31-32
 ISIP 44 FSIP 40
 Temp 121°

Formation	Sample	E-Log	Datum	Well 1	Well 2	Well 3	Well 4
Anhydrite	2283	2290	+534	-4	+5	+4	-1
Base/Anhydrite	2305	2312	+512	-6	+5	-7	-2
Stotler	3448	3464	-640	-16	-5	-23	-13

Well 1: Darrah Oil Company Ottlev No. 3-12 NE SW SE SW Sec 12 T14S R32W
Well 2: Pioneer Resources Knopp No. 7 2283' FNL & 1650' FEL Sec 13 T14S R32W
Well 2: Pioneer Resources Knopp No. 5 N2 NW SW NW Sec 13 T14S R32W
Well 2: Pioneer Resources Ottlev No. 1 NE NW SE Sec 12 T14S R32W

Respectfully submitted,
Macklin M. Armstrong

 Lmst fw7>
 shale, grn
 shale, gry
 Carbon Sh
 shale, red
 Shcol
 Ss
 Sltst

MINERAL
 ▲ Chert, dark
 P Pyrite
 .• Sandy
 △ Chert White

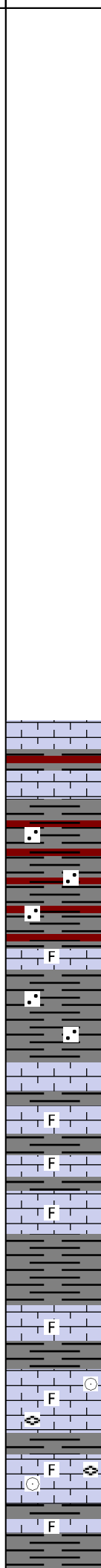
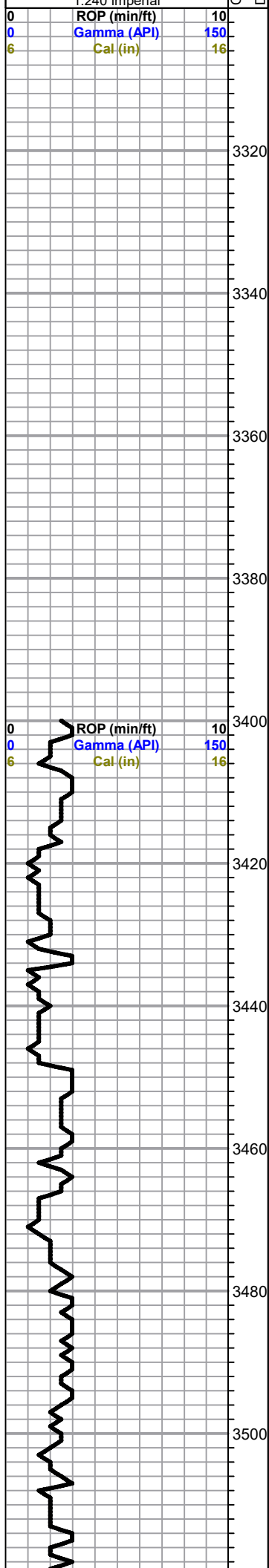
- Crinoids
- F Fossils < 20%
- ⊙ Oolite
- ⌘ Pellets
- ⊞ Fusulinid

C Chalky

DST

- DST Int
- DST alt
- Core

Printed by GEOSlip VC Striplog version 4.0.8.15 (www.grsi.ca)									
Curve Track #1		Depth Intervals	DST	Lithology	Oil Show	Geological Descriptions	Comment		
ROP (min/ft)									
Gamma (API)									
Cal (in)									
1:240 Imperial		Cored Interval							
		DST Interval							



Darrah Oil Company, LLC Knopp No. 9-13 1155' FNL and 2475' FEL SW SW NW NE Sec 13 T14S R32W Logan County, Kansas GL 2815 KB 2824	
Ls-gry fxln mhd no por	
Sh-gry/red	
Ls-gry/lt gry fxln mhd no por	
Sh-gry/dk gry/sm red sl sdy	
Sh-AA	
Sh-AA	
Ls-gry fxln mdh sl fos no por	
Sh-gry/dk gry sl sdy	
Sh-AA	
----- Stotler 3448 -624 -----	
Ls-gry fxln mhd/dns no por	
Sh-gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos no por	
Sh-gry/dk gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos no por	
Sh-gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos no por	
Sh-gry/dk gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos no por	
Sh-gry/dk gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos with crin and fus no por	
Sh-gry/dk gry	
Ls-lt gry/tan f/mxln mhd/dns sl fos with crin and fus no por	
Sh-gry	
Ls-lt gry fxln mhd sl fos no por	

Mud Program:
Mudco:
Chemical Gel/Premix

Sample Cuttings:
Kansas Geological Survey
Well Sample Library

Testing: Trilobite Testing

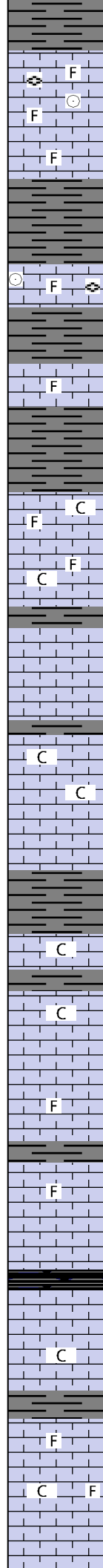
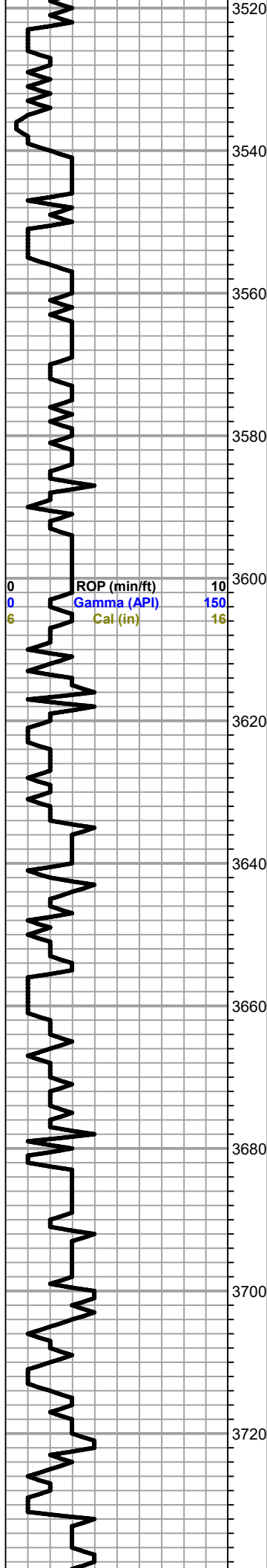
Electric Logs: Midwest
Wireline
DIL
CNL/CDL

Deviation:
232' - 1/2°
2316' - 1/2°
3375' - 1/2°
4458' - 1/4°
4665' - 1 1/4°

Mud Data 3375'
7:20 am on 7-14-22
Wt 8.6 Vis 54 WL 6.4
pH 12.0 Chl 1500 Sol 2.0
YP 14 LCM 2.0

Pipe strap at 3375'. Short
8.56' to board. Made
correction to the board.

All fromation tops on
this geological log have
been correlated back to
the electric log



Sh-gry/dk gry

Ls-tan/lt gry fxln to blkly mhd highly fos with fus and crin no por

Ls-AA

Ls-lt gry/tan f/mxln dns sl fos no por

Sh-gry/dk gry

Ls-tan/crm fxln to blkly mhd highly fos with fus and crin no por

Sh-gry/dk gry

Ls-tan/crm fxln to blkly highly fos with fus and crin no por

Sh-gry/dk gry

----- **Topeka 3588 -764** -----

Ls-tan/crm fxln mhd/dns fos sl clky no por

Ls-AA

Sh-gry/dk gry

Ls-lt gry fxln mhd no por

Ls-AA

Sh-gry

Ls-crm/lt gry f/mxln mhd sl clky no por

Ls-AA

Ls-crm/lt gry fxln mhd/dns no por

Sh-gry/dk gry

Ls-crm/lt gry fxln mhd sl clky no por

Sh-gry/dk gry

Ls-crm/lt gry fxln mhd sl clky no por

Ls-tan fxln mhd/dns no por

Ls-tan/lt gry fxln mhd sl fos no por

Sh-gry/dk gry

Ls-tan/lt gry fxln mhd/dns sl fos no por

Ls-lt gry fxln mhd no por

Sh-blk carb

Ls-lt gry fxln mhd/dns no por

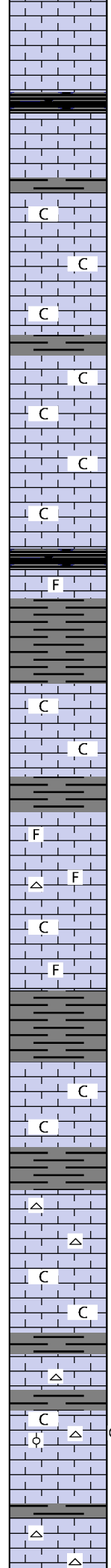
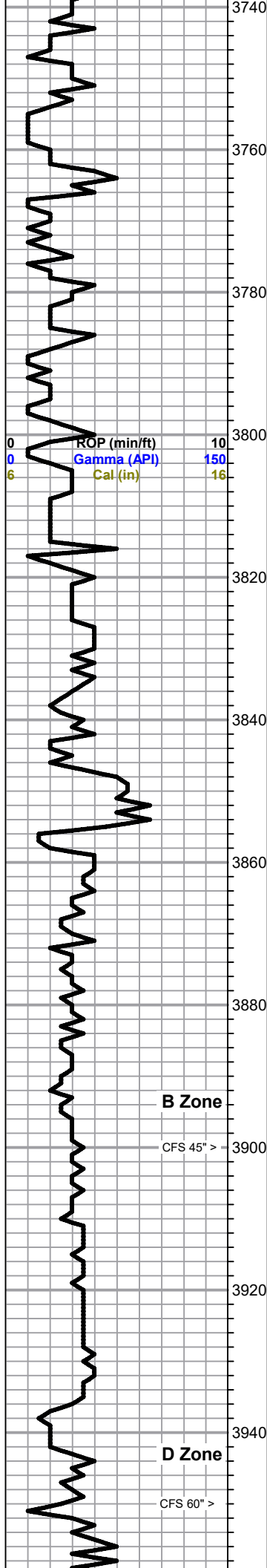
Ls-tan/lt gry fxln soft/mhd clky no por

Sh-gry/dk gry

Ls-tan/lt gry f/mxln mhd/dns fos no por

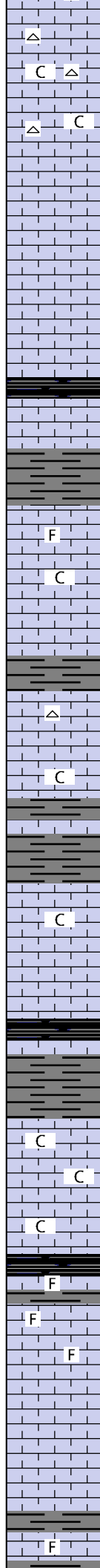
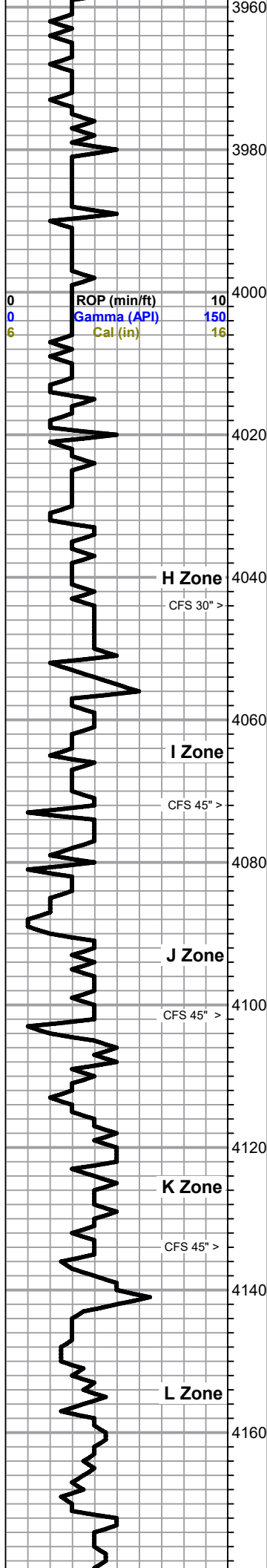
Ls-crm/lt tan fxln sl fos clky no por

Ls-tan fxln mhd no por



Ls-AA
Ls-tan/lt gry fxln mhd/dns no por
Sh-blk carb
Ls-tan/lt gry fxln mhd no por
Sh-gry/dk gry
Ls-lt gry/crm fxln soft/mhd clky no por
Ls-AA
Ls-lt gry fxln mhd sl clky no por
Sh-gry/dk gry
Ls-crm/tan fxln mhd sl clky no por
Ls-AA
Ls-lt gry/crm fxln mhd sl clky no por
Ls-AA
----- Heebner 3816 -992 -----
Sh-blk carb
Ls-gry f/mxln dns sl fos dns no por
Sh-gry/dk gry
Sh-AA
Ls-crm/wt fxln mhd clky no por
Ls-AA
Sh-gry/dk gry
----- Lansing 3853 -1029 -----
Ls-crm/lt tan fxln mhd fos no por
Ls-crm/lt gry fxln dns fos no por sm Cht-lt gry fsh sl fos opaq
Ls-crm/lt tan fxln dns no por sm Ls-wt fxln soft clky
Ls-lt gry/gry fxln mhd fos no por
Sh-gry/dk gry
Ls-crm fxln mhd/dns no por sm Ls-wt fxln soft clky
Ls-AA
Sh-gry/dk gry
Ls-crm/lt tan fxln dns no por sm Cht-tan fsh opaq
Ls-AA sm Cht-tan fsh opaq
Ls-crm fxln dns no por sm Ls-wt fxln soft clky
Sh-gry/dk gry
Ls-crm/tan fxln dns no por sm Cht-wt fsh opaq
Sh-gry/gry
Ls-crm/lt gry fxln mhd/dns no por sm Ls-wt fxln soft clky and sm Cht-wt/lt gry fsh opaq and 1 piece of Ls-gry fxln mhd fos ool gd inter ool por dk brn sct stn fr/gd cut vssfo on brk
Ls-crm/lt gry fxln dns no por
Sh-gry/dk gry
Ls-crm/tan fxln dns no por sm Cht-lt gry fsh opaq

Mud Data 3875'
9:00 am on 7-15-22
Wt 9.0 Vis 57 WL 7.2
pH 11.0 Chl 2000 Sol 4.9
YP 15 LCM 1.0



Ls-AA sm Cht-wt/lt gry fsh opaq

Ls-crm/tan fxln mhd sl clky no por sm Cht-lt gry fsh opaq

Ls-AA sm Cht-wt fsh opaq

Ls-crm/lt gry fxln mhd/dns no por

Ls-AA

Ls-crm/lt gry fxln mhd/dns no por

Ls-AA

----- **Muncie Creek 4012 -1188** -----

Sh-blk carb

Ls-gry/gry brn fxln dns no por

Sh-gry/dk gry

Ls-gry/brn fxln dns no por sm Ls-gry blkly dns fos no por

Ls-crm/lt gry fxln mhd sl clky no por

Ls-lt gry/crm fxln mnd/dns no por

Sh-gry/dk gry

Ls-tan/lt gry fxln dns no por sm Cht-wt fsh opaq

Ls-AA

Ls-crm fxln mhd sl clky no por

Sh-gry/dk gry

Ls-gry fxln dns no por

Sh-gry/dk gry

Ls-crm/lt tan fxln mhd clky no por

Ls-crm/lt gry fxln dns no por

----- **Stark 4102 -1278** -----

Sh-blk carb

Ls-gry/brn f/mxln dns no por

Sh-gry/dk gry

Ls-crm/lt gry fxln mhd sl clky no por

Ls-lt gry fxln dns sl clky no por

Ls-lt gry fxln mhd/dns no por sm Ls-crm fxln mhd sl clky no por

----- **Hushpuckney 4135 -1311** -----

Sh-blk carb

Ls-gry/tan fxln dns fos no por

Sh-gry

Ls-gry/tan/brn fxln mhd/dns fos no por

Ls-lt gry/gry fxln dns no por

Ls-crm/lt gry fxln dns no por

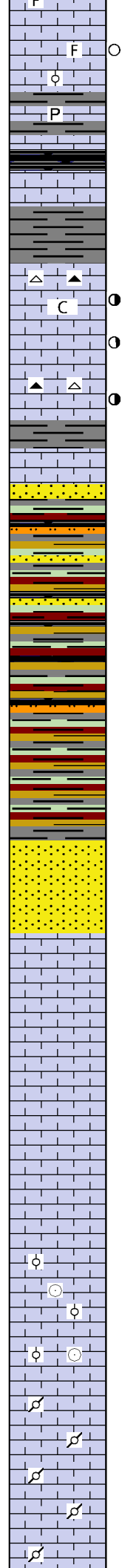
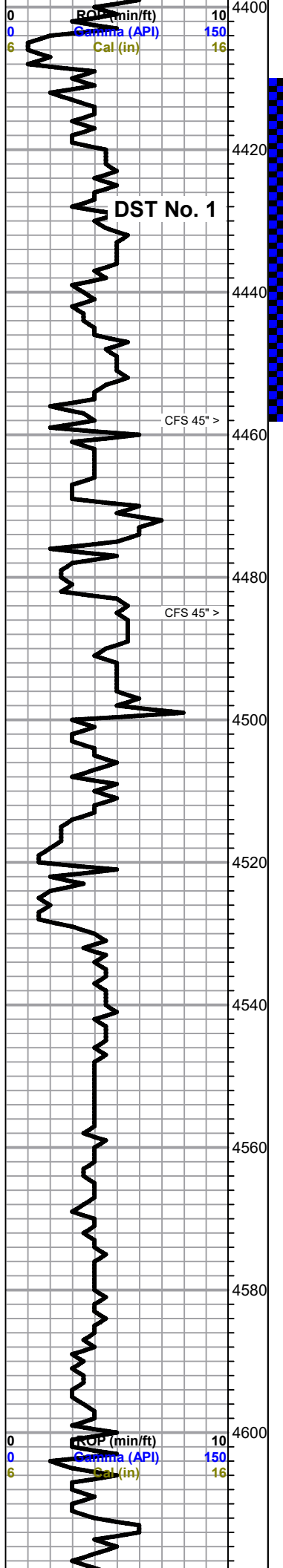
Ls-AA

Sh-gry/dk gry

Ls-lt gry f/mxln mhd/dns fos no por

Sh-gry/dk gry

Mud Data 4143'
7:10 am on 7-16-22
Wt 9.2 Vis 58 WL 8.8
pH 11.0 Chl 2500 Sol 5.0
YP 19 LCM 2.0



LS-tan/brn fxlnd mhd nos no por

LS-tan/gry f/mxln mhd sl fos no por with 2 pcs of Ls-gry fxlnd mhd pr interxln por spt brn stn fr cut trc fo on brk

LS-tan/brn/gry fxlnd dns no por sm Ls-gry mxln dns fos ool no por

Sh-ary/dk arv

LS-tan/brn fxlnd dns no por with sm pvrite

Sh-gry/dk gry

LS-tan/brn fxlnd dns no por

Sh-blk carb

LS-tan/brn/gry fxlnd dns no por

Sh-gry/dk gry

----- **Johnson Zone 4436 -1612** -----

LS-lt gry/tan fxlnd dns no por sm Cht-tan/brn fsh opa

LS-lt gry/tan fxlnd mhd sl clk no por with few pcs (3) of Ls-brn fxlnd mhd fr/gd vug por dk brn sct stn gd cut ssfo on brk no odor

LS-lt gry/tan fxlnd mhd/dns no por with few pcs (3) Ls-brn fxlnd mhd pr interxln por dk brn spt stn gd cut vssfo on brk no odor

LS-lt gry/tan fxlnd dns sl clk no por sm Cht-lt gry/brn fsh opa

LS-crm/tan fxlnd mhd/dns sl clk no por with 2 pcs of Ls-brn fxlnd mhd pr/fr vug por dk brn spt stn gd cut ssfo on brk no odor

Sh-gry/dk gry

LS-crm/tan fxlnd mhd/dns no por

----- **Morrow 4467 -1643** -----

Ss-lt gry vfgn sub ang to ang tite cement no oil stn

Sh-gry/grn/mar/blk/yel

Sh-AA with sm Siltstone lt grn vfgn very soft to gummy

Sh-gry/grn/mar/yel with wm Ss-wt fgrn sub ang tite cement nsfo

Sh-AA with sm Ss-lt grn vfg sug and sl fri to tite cement nsfo

Sh-gry/grn/mar/blk/yel

Sh-AA

Sh-gry/dk gry/mar/yel sm Siltstone-lt gry

Sh-AA

Sh-AA

Sh-AA

Ss-lt gry fgrn sub rnd to sub ang sl fri nsfo

Ss-lt gry/clr fgrn sub rnd to sub ang tite cement

Ss-lt gry/clr fgrn sub rnd sl fri nsfo

Ss-AA

----- **Mississippi 4530 -1706** -----

LS-lt gry f/mxln dns no por

LS-AA

LS-lt gry fxlnd dns no por

LS-AA

LS-lt gry/tan fxlnd dns no por

LS-lt gry fxlnd dns no por and Ls-gry fxlnd mhd/dns fos oom no por sm free crin

LS-AA

LS-lt gry/crm f/mxln to sl gran sl pellatel mhd/dns no por

LS-lt gry/tan f/mxln sl pellatel mhd/dns no por

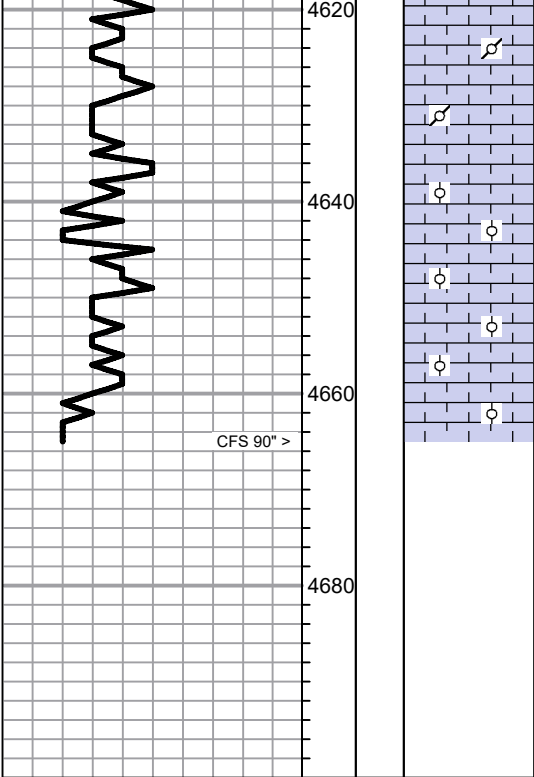
LS-lt gry/tan f/mxln dns sl pellatel no por

Mud Data 4407'
8:00 am on 7-17-22
Wt 9.4 Vis 54 WL 9.6
pH 10.5 Chl 3600 Sol 7.4
YP 16 LCM 2.0

DST No. 1
4411 to 4458
30-30-30-30
1st Open: Weak sur blow,
built to 1 1/4"
2nd Open: No blow
Recovery: 5' Mud
IHP 2310 FHP 2199
IFP 31-32 FFP 32-32
ISIP 44 FSIP 40
Temp 121°

Pulled 28 stand short trip at
4458' then cir for test 60"

Mud Data 4486'
5:45 am on 7-18-22
Wt 9.0 Vis 76 WL 9.6
pH 10.5 Chl 3000 Sol 5.0
YP 22 LCM 2.0



Ls-AA

Ls-AA

----- **Spergen 4638 -1814** -----

Ls-gry/brn mhd highly fos ool no por

Ls-AA

Ls-AA

----- **RTD 4665 -1841** -----

Finished drilling at 7:02 pm on 7-18-22. Pulled 25 stand short trip then circulated for log 120 minutes.

Fiished logging at 10:15 am on 7-19-22.