BLACK OAK

EXPLORATION

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name:	THRELKEL Et Al 1-23
Well Id:	
Location:	Section 23 - 3S - 35W Rawlins Co, Kansas
License Number:	API # 15-153-21275
Region:	WILDCAT
Spud Date:	12/10/2021
Drilling Completed:	12/ 18/2021
Surface Coordinates:	2485' FSL & 200' FEL
Bottom Hole Coordinates:	
Ground Elevation (ft):	2991'
K.B. Elevation (ft):	3002'
Logged Interval (ft):	3650' To: 4670'
Total Depth (ft):	4670'
Formation:	Lansing Kansas City
Type of Drilling Fluid:	Chemical Gel/Polymer Fresh Water -Based

Printed by WellSight LogViewer from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: BLACK OAK EXPLORATION, LLC
Address: 1474 S St Paul St
Denver CO 80210

GEOLOGIST

Name: TIM HEDRICK
Company: EARTH TECH OGL,INC
Address: Po BOX 683
Hooker, okla. 73945
580-754-0062 Cell

ROCK TYPES

LITHOLOGY

- Anhy
- Bent
- Brec
- Cht
- Clyst
- Coal
- Congl
- Dol
- Gyp
- Igne
- Lmst
- Meta
- Mrlst
- Salt
- Shale
- Shcol
- Shgy
- Sltst
- Ss
- Till
- Sltstn
- Shale
- Sandylms
- Lms
- Gry sh
- Dtd
- Dol
- Carb sh
- pipesymbol
- unknown lith
- Red shale

FOSSIL

- Oomoldic
- Fuss
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

MINERAL

- Slty
- Sand
- Dol
- Chlorite
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

STRINGER

- Sh
- Sandylms
- Lms
- Grysltt
- Grysh
- Dol
- Clystn
- Carbsh
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

TEXTURE

- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OIL SHOW

- Gas show
- Even
- Spotted
- Ques
- Dead

INTERVAL

- Dst
- Core
- Dst
- Straddle test tail pipe

EVENT

- Rft
- Sidewall
- Dst
- Open hole
- Perforations

Curve Track 1	MD	Lithology	Oil Shows	Geological Descriptions	Engineering Data
ROP (Min/Ft) — Gamma (API) — Caliper (inches)					TG (Units) — C1 (units) — C2 (units) — C3 (units) — C4 (units) — C5 (units)

0 ROP (Min/Ft) 10
1 Gamma (API) 150
6 Caliper (inches) 16

0 TG, C1-C5 50

Bit #2
7 7/8
Smith
FHI18 yvps
RPO 691
jets 3-15's
in at 3650
Tri Cone

Black Oak Exploration
Threlkel Et Al 1-23
2485' FSL & 200' FeL
Sec. 23 3S 35W
Rawlins Co. Kansas

Mud: Morgan Mud
Engineer
David Lines

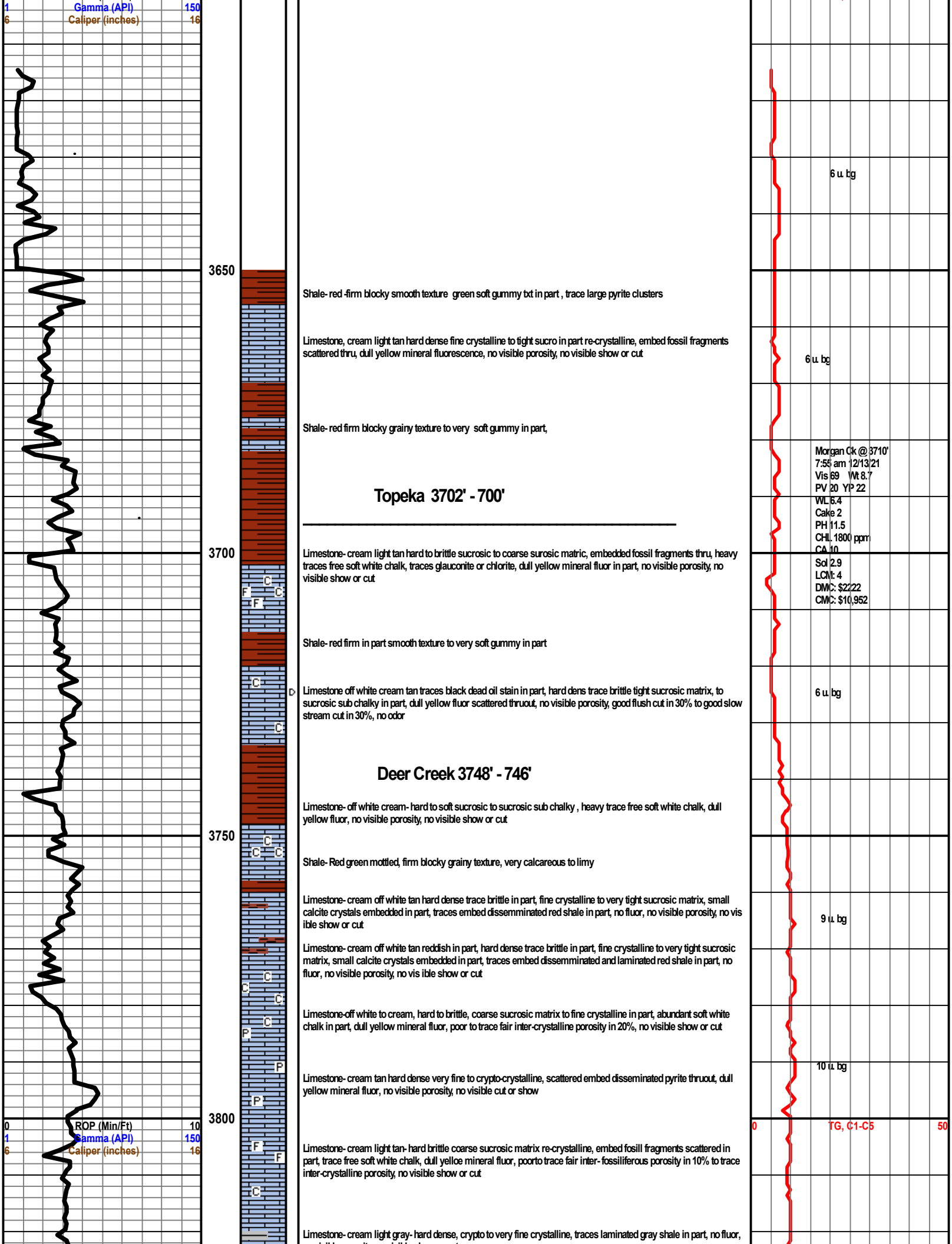
Geo: Tim Hedrick on location 12/12/2021
gas unit operational from 3600'

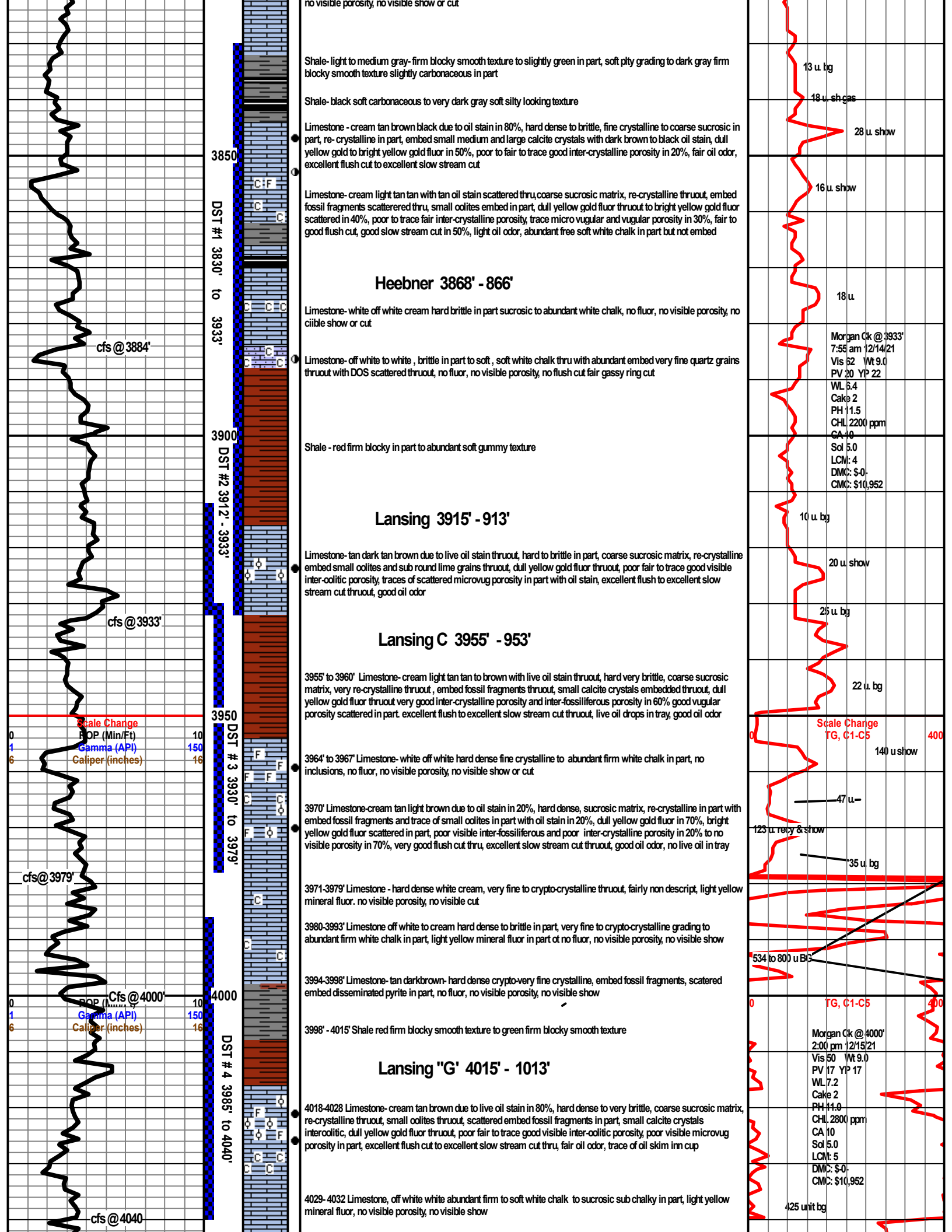
3600

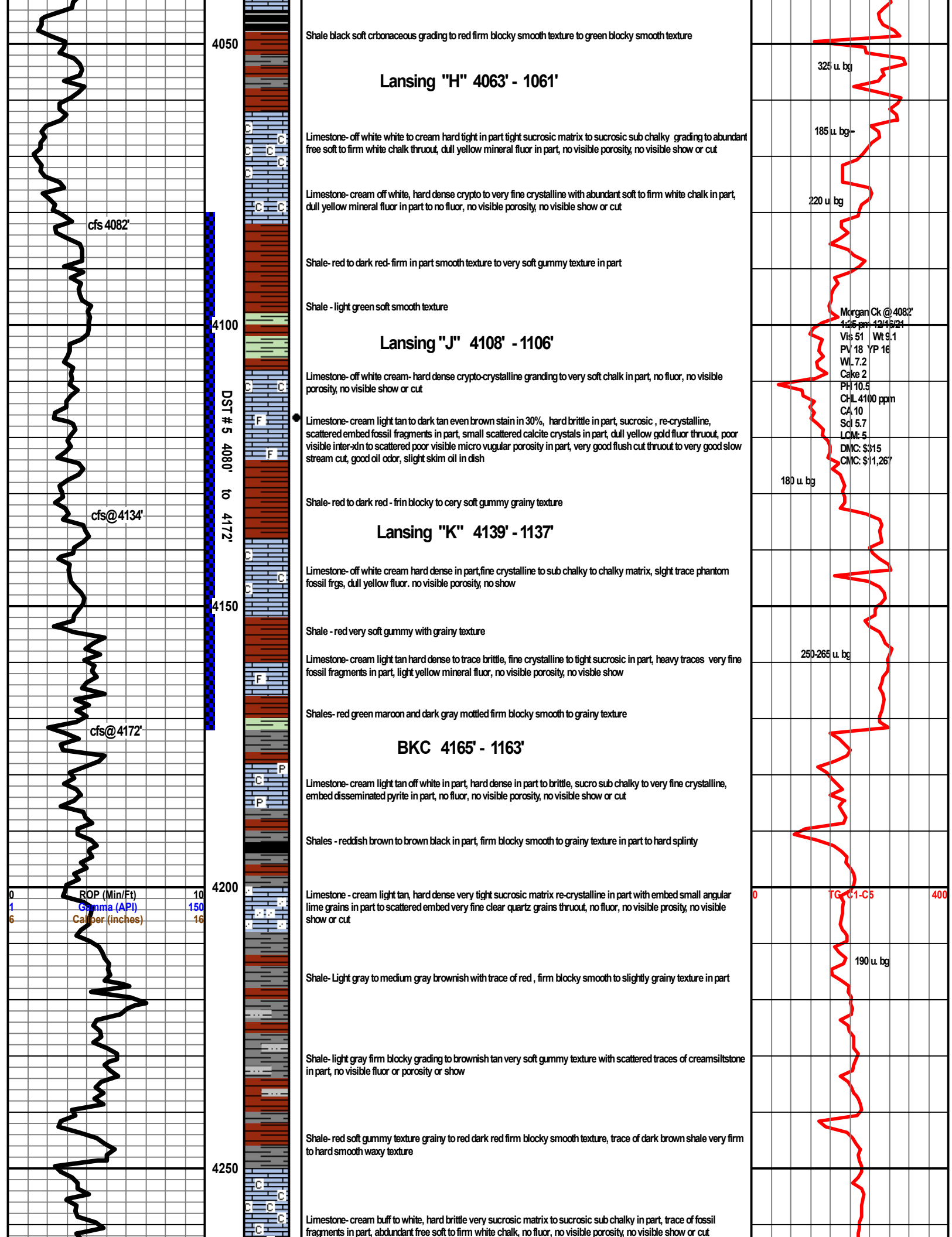
start wet and dry samples at 3650'

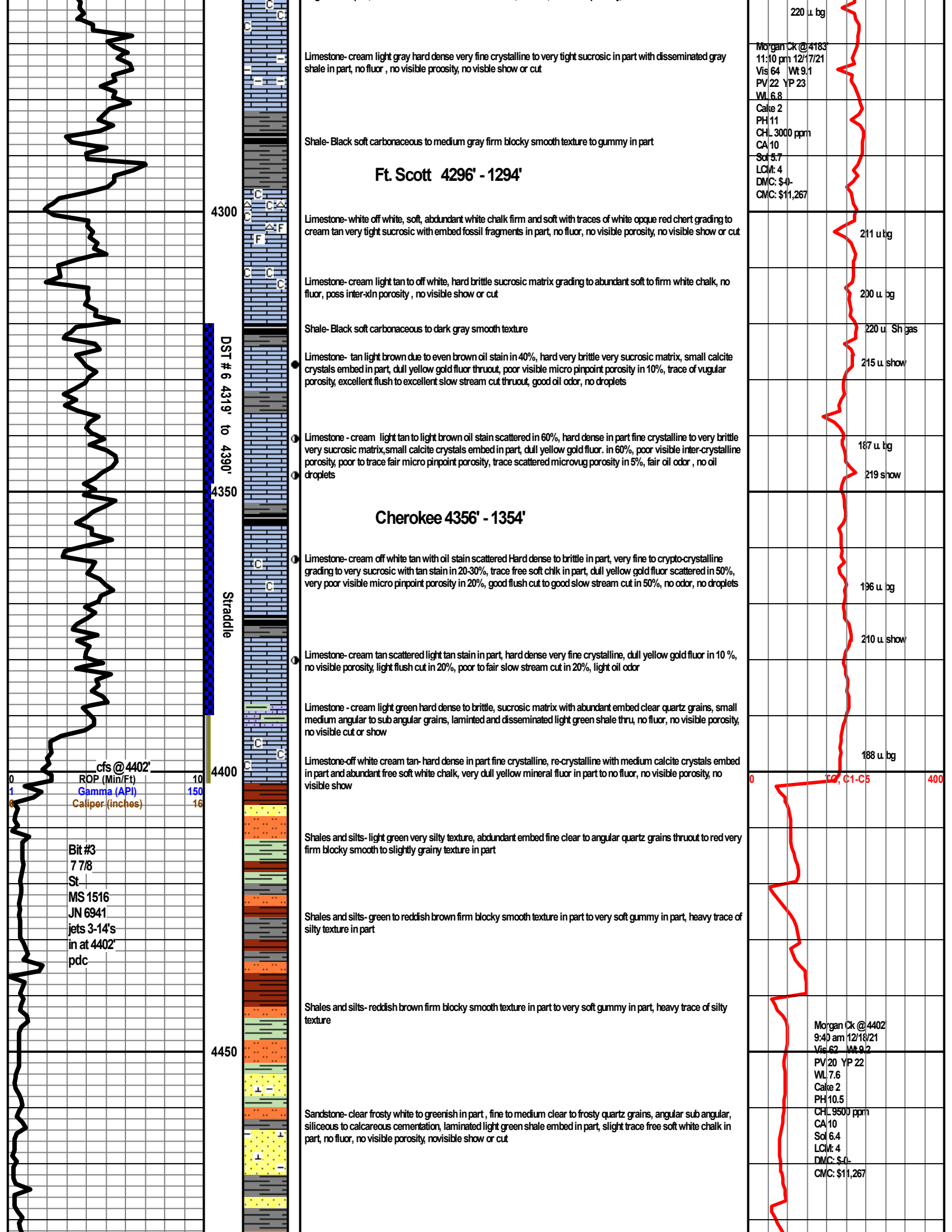
0 ROP (Min/Ft) 10

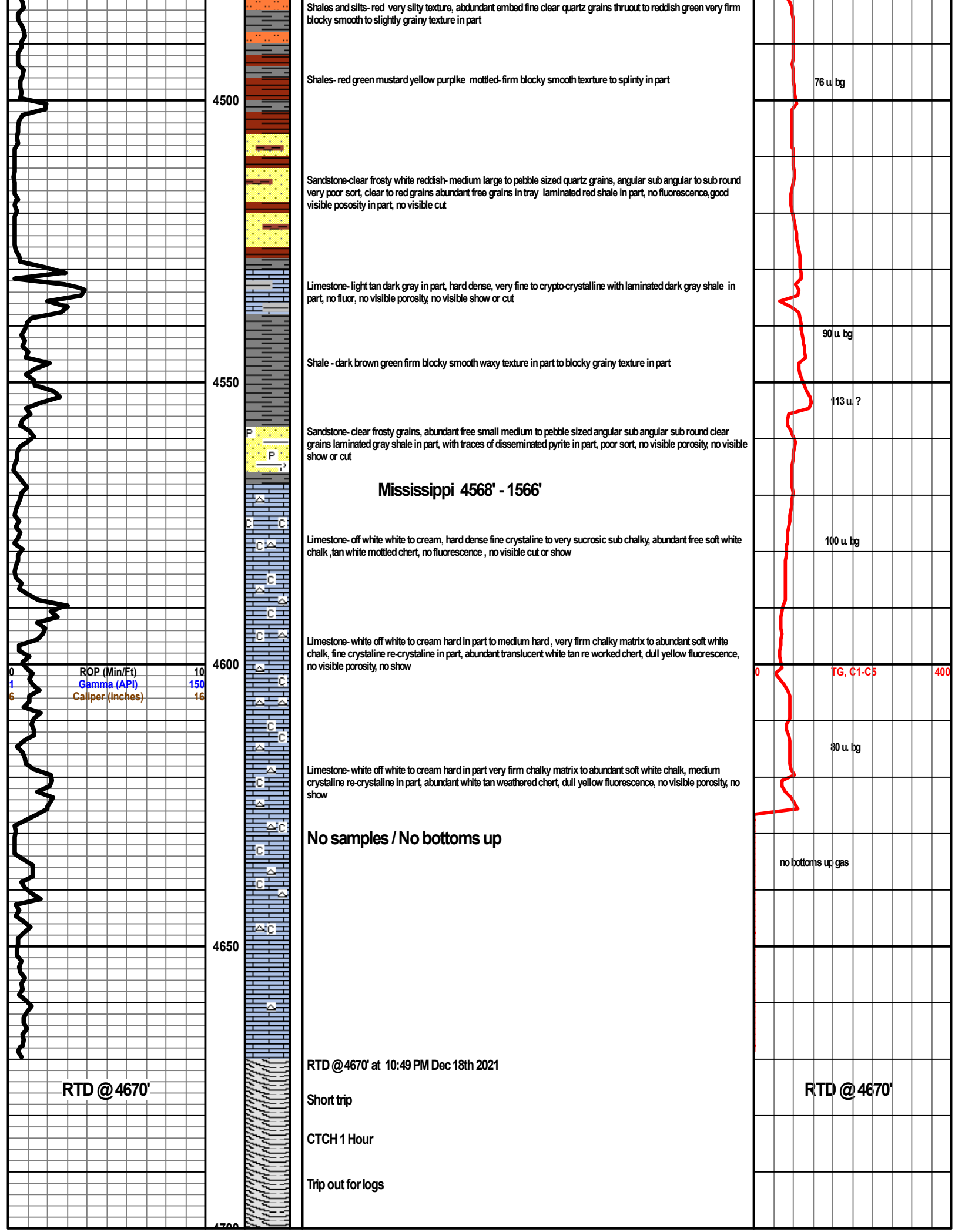
0 TG, C1-C5 50


1 Gamma (API) 150
6 Caliper (inches) 16
3650
3700
3750
3800
0 ROP (Min/Ft) 10
1 Gamma (API) 150
6 Caliper (inches) 16
Shale- red -firm blocky smooth texture green soft gummy txt in part , trace large pyrite clusters
Limestone, cream light tan hard dense fine crystalline to tight sucro in part re-crystalline, embed fossil fragments scattered thru, dull yellow mineral fluorescence, no visible porosity, no visible show or cut
Shale- red firm blocky grainy texture to very soft gummy in part,
Topeka 3702' - 700'
Limestone- cream light tan hard to brittle sucrosic to coarse surosic matric, embedded fossil fragments thru, heavy traces free soft white chalk, traces glauconite or chlorite, dull yellow mineral fluor in part, no visible porosity, no visible show or cut
Shale- red firm in part smooth texture to very soft gummy in part
Limestone off white cream tan traces black dead oil stain in part, hard dens trace brittle tight sucrosic matrix, to sucrosic sub chalky in part, dull yellow fluor scattered thruout, no visible porosity, good flush cut in 30% to good slow stream cut in 30%, no odor
Deer Creek 3748' - 746'
Limestone- off white cream- hard to soft sucrosic to sucrosic sub chalky , heavy trace free soft white chalk, dull yellow fluor, no visible porosity, no visible show or cut
Shale- Red green mottled, firm blocky grainy texture, very calcareous to limy
Limestone- cream off white tan hard dense trace brittle in part, fine crystalline to very tight sucrosic matrix, small calcite crystals embedded in part, traces embed dissemminated red shale in part, no fluor, no visible porosity, no vis ible show or cut
Limestone- cream off white tan reddish in part, hard dense trace brittle in part, fine crystalline to very tight sucrosic matrix, small calcite crystals embedded in part, traces embed dissemminated and laminated red shale in part, no fluor, no visible porosity, no vis ible show or cut
Limestone-off white to cream, hard to brittle, coarse sucrosic matrix to fine crystalline in part, abundant soft white chalk in part, dull yellow mineral fluor, poor to trace fair inter-crystalline porosity in 20%, no visible show or cut
Limestone- cream tan hard dense very fine to crypto-crystalline, scattered embed disseminated pyrite thruout, dull yellow mineral fluor, no visible porosity, no visible cut or show
Limestone- cream light tan- hard brittle coarse sucrosic matrix re-crystalline, embed fosill fragments scattered in part, trace free soft white chalk, dull yelloe mineral fluor, poorto trace fair inter- fossiliferous porosity in 10% to trace inter-crystalline porosity, no visible show or cut
Limestone- cream light gray- hard dense, crypto to very fine crystalline, traces laminated gray shale in part, no fluor,
6 u. bg
6 u. bg
Morgan Ck @ 3710'
7:55 am 12/13/21
Vis 69 Wt 8.7
PV 20 YP 22
WL 6.4
Cake 2
PH 11.5
CHL 1800 ppm
CA 10
Sol 2.9
LCM: 4
DMC: $2222
CMC: $10,952
6 u. bg
9 u. bg
10 u. bg
0 TG, C1-C5 50


no visible porosity, no visible show or cut
Shale- light to medium gray- firm blocky smooth texture to slightly green in part, soft plty grading to dark gray firm blocky smooth texture slightly carbonaceous in part
Shale- black soft carbonaceous to very dark gray soft silty looking texture
Limestone - cream tan brown black due to oil stain in 80%, hard dense to brittle, fine crystalline to coarse sucrosic in part, re- crystalline in part, embed small medium and large calcite crystals with dark brown to black oil stain, dull yellow gold to bright yellow gold fluor in 50%, poor to fair to trace good inter-crystalline porosity in 20%, fair oil odor, excellent flush cut to excellent slow stream cut
Limestone- cream light tan tan with tan oil stain scattered thru,coarse sucrosic matrix, re-crystalline thruout, embed fossil fragments scatterered thru, small oolites embed in part, dull yellow gold fluor thruout to bright yellow gold fluor scattered in 40%, poor to trace fair inter-crystalline porosity, trace micro vugular and vugular porosity in 30%, fair to good flush cut, good slow stream cut in 50%, light oil odor, abundant free soft white chalk in part but not embed
Heebner 3868' - 866'
Limestone- white off white cream hard brittle in part sucrosic to abundant white chalk, no fluor, no visible porosity, no ciible show or cut
Limestone- off white to white , brittle in part to soft , soft white chalk thru with abundant embed very fine quartz grains thruout with DOS scattered thruout, no fluor, no visible porosity, no flush cut fair gassy ring cut
Shale - red firm blocky in part to abundant soft gummy texture
Lansing 3915' - 913'
Limestone- tan dark tan brown due to live oil stain thruout, hard to brittle in part, coarse sucrosic matrix, re-crystalline embed small oolites and sub round lime grains thruout, dull yellow gold fluor thruout, poor fair to trace good visible inter-oolitic porosity, traces of scattered microvug porosity in part with oil stain, excellent flush to excellent slow stream cut thruout, good oil odor
Lansing C 3955' - 953'
3955' to 3960' Limestone- cream light tan tan to brown with live oil stain thruout, hard very brittle, coarse sucrosic matrix, very re-crystalline thruout , embed fossil fragments thruout, small calcite crystals embedded thruout, dull yellow gold fluor thruout very good inter-crystalline porosity and inter-fossiliferous porosity in 60% good vugular porosity scattered in part. excellent flush to excellent slow stream cut thruout, live oil drops in tray, good oil odor
3964' to 3967' Limestone- white off white hard dense fine crystalline to abundant firm white chalk in part, no inclusions, no fluor, no visible porosity, no visible show or cut
3970' Limestone-cream tan light brown due to oil stain in 20%, hard dense, sucrosic matrix, re-crystalline in part with embed fossil fragments and trace of small oolites in part with oil stain in 20%, dull yellow gold fluor in 70%, bright yellow gold fluor scattered in part, poor visible inter-fossiliferous and poor inter-crystalline porosity in 20% to no visible porosity in 70%, very good flush cut thru, excellent slow stream cut thruout, good oil odor, no live oil in tray
3971-3979' Limestone - hard dense white cream, very fine to crypto-crystalline thruout, fairly non descript, light yellow mineral fluor. no visible porosity, no visible cut
3980-3993' Limestone off white to cream hard dense to brittle in part, very fine to crypto-crystalline grading to abundant firm white chalk in part, light yellow mineral fluor in part ot no fluor, no visible porosity, no visible show
3994-3998' Limestone- tan darkbrown- hard dense crypto-very fine crystalline, embed fossil fragments, scatered embed disseminated pyrite in part, no fluor, no visible porosity, no visible show
3998' - 4015' Shale red firm blocky smooth texture to green firm blocky smooth texture
Lansing "G" 4015' - 1013'
4018-4028 Limestone- cream tan brown due to live oil stain in 80%, hard dense to very brittle, coarse sucrosic matrix, re-crystalline thruout, small oolites thruout, scattered embed fossil fragments in part, small calcite crystals interoolitic, dull yellow gold fluor thruout, poor fair to trace good visible inter-oolitic porosity, poor visible microvug porosity in part, excellent flush cut to excellent slow stream cut thru, fair oil odor, trace of oil skim inn cup
4029- 4032 Limestone, off white white abundant firm to soft white chalk to sucrosic sub chalky in part, light yellow mineral fluor, no visible porosity, no visible show
3850
3900
3950
4000
DST #1 3830' to 3933'
DST #2 3912' - 3933'
DST # 3 3930' to 3979'
DST # 4 3985' to 4040'
cfs @3884'
cfs @3933'
cfs@3979'
Cfs @4000'
cfs @4040
Scale Change
ROP (Min/Ft)
Gamma (API)
Caliper (inches)
0
1
6
10
150
16
13 u bg
18 u. sh gas
28 u. show
16 u. show
18 u.
Morgan Ck @ 3933'
7:55 am 12/14/21
Vis 62 Wt 9.0
PV 20 YP 22
WL 6.4
Cake 2
PH 11.5
CHL 2200 ppm
CA 10
Sol 5.0
LCM: 4
DMC: $-0-
CMC: $10,952
10 u. bg
20 u. show
25 u. bg
22 u. bg
Scale Change
TG, C1-C5
0
400
140 u show
47 u
123 u recy & show
35 u bg
534 to 800 u BG
TG, C1-C5
Morgan Ck @ 4000'
2:00 pm 12/15/21
Vis 50 Wt 9.0
PV 17 YP 17
WL 7.2
Cake 2
PH 11.0
CHL 2800 ppm
CA 10
Sol 5.0
LCM: 5
DMC: $-0-
CMC: $10,952
425 unit bg


4050
4100
4150
4200
4250
cfs 4082'
cfs@4134'
cfs@4172'
DST # 5 4080' to 4172'
0 ROP (Min/Ft) 10
1 Gamma (API) 150
6 Caliper (inches) 16
Shale black soft crbonaceous grading to red firm blocky smooth texture to green blocky smooth texture
Lansing "H" 4063' - 1061'
Limestone- off white white to cream hard tight in part tight sucrosic matrix to sucrosic sub chalky grading to abundant free soft to firm white chalk thruout, dull yellow mineral fluor in part, no visible porosity, no visible show or cut
Limestone- cream off white, hard dense crypto to very fine crystalline with abundant soft to firm white chalk in part, dull yellow mineral fluor in part to no fluor, no visible porosity, no visible show or cut
Shale- red to dark red- firm in part smooth texture to very soft gummy texture in part
Shale - light green soft smooth texture
Lansing "J" 4108' - 1106'
Limestone- off white cream- hard dense crypto-crystalline granding to very soft chalk in part, no fluor, no visible porosity, no visible show or cut
Limestone- cream light tan to dark tan even brown stain in 30%, hard brittle in part, sucrosic , re-crystalline, scattered embed fossil fragments in part, small scattered calcite crystals in part, dull yellow gold fluor thruout, poor visible inter-xln to scattered poor visible micro vugular porosity in part, very good flush cut thruout to very good slow stream cut, good oil odor, slight skim oil in dish
Shale- red to dark red - frin blocky to cery soft gummy grainy texture
Lansing "K" 4139' - 1137'
Limestone- off white cream hard dense in part,fine crystalline to sub chalky to chalky matrix, slght trace phantom fossil frgs, dull yellow fluor. no visible porosity, no show
Shale - red very soft gummy with grainy texture
Limestone- cream light tan hard dense to trace brittle, fine crystalline to tight sucrosic in part, heavy traces very fine fossil fragments in part, light yellow mineral fluor, no visible porosity, no visble show
Shales- red green maroon and dark gray mottled firm blocky smooth to grainy texture
BKC 4165' - 1163'
Limestone- cream light tan off white in part, hard dense in part to brittle, sucro sub chalky to very fine crystalline, embed disseminated pyrite in part, no fluor, no visible porosity, no visible show or cut
Shales - reddish brown to brown black in part, firm blocky smooth to grainy texture in part to hard splinty
Limestone - cream light tan, hard dense very tight sucrosic matrix re-crystalline in part with embed small angular lime grains in part to scattered embed very fine clear quartz grains thruout, no fluor, no visible prosity, no visible show or cut
Shale- Light gray to medium gray brownish with trace of red , firm blocky smooth to slightly grainy texture in part
Shale- light gray firm blocky grading to brownish tan very soft gummy texture with scattered traces of creamsiltstone in part, no visible fluor or porosity or show
Shale- red soft gummy texture grainy to red dark red firm blocky smooth texture, trace of dark brown shale very firm to hard smooth waxy texture
Limestone- cream buff to white, hard brittle very sucrosic matrix to sucrosic sub chalky in part, trace of fossil fragments in part, abdundant free soft to firm white chalk, no fluor, no visible porosity, no visible show or cut
325 u. bg
185 u. bg
220 u. bg
Morgan Ck @ 4082'
1:05 pm 12/15/24
Vis 51 Wt 9.1
PV 18 YP 16
WL 7.2
Cake 2
PH 10.5
CHL 4100 ppm
CA 10
Sol 5.7
LCM: 5
DMC: $315
CMC: $11,267
180 u. bg
250-265 u. bg
0 TG C1-C5 400
190 u. bg


220 u. bg
Limestone- cream light gray hard dense very fine crystalline to very tight sucrosic in part with disseminated gray shale in part, no fluor , no visible proosity, no visble show or cut
Morgan Ck @ 4183'
11:10 pm 12/17/21
Vis 64 Wt 9.1
PV 22 YP 23
WL 6.8
Cake 2
PH 11
CHL 3000 ppm
CA 10
Sol 5.7
LCM: 4
DMC: $-0-
CMC: $11,267
Shale- Black soft carbonaceous to medium gray firm blocky smooth texture to gummy in part
Ft. Scott 4296' - 1294'
4300
Limestone- white off white, soft, abdundant white chalk firm and soft with traces of white opque red chert grading to cream tan very tight sucrosic with embed fossil fragments in part, no fluor, no visible porosity, no visible show or cut
211 u bg
Limestone- cream light tan to off white, hard brittle sucrosic matrix grading to abundant soft to firm white chalk, no fluor, poss inter-xln porosity , no visible show or cut
200 u. bg
Shale- Black soft carbonaceous to dark gray smooth texture
220 u Sh gas
DST # 6 4319' to 4390'
Limestone- tan light brown due to even brown oil stain in 40%, hard very brittle very sucrosic matrix, small calcite crystals embed in part, dull yellow gold fluor thruout, poor visible micro pinpoint porosity in 10%, trace of vugular porosity, excellent flush to excellent slow stream cut thruout, good oil odor, no droplets
215 u show
Limestone - cream light tan to light brown oil stain scattered in 60%, hard dense in part fine crystalline to very brittle very sucrosic matrix,small calcite crystals embed in part, dull yellow gold fluor. in 60%, poor visible inter-crystalline porosity, poor to trace fair micro pinpoint porosity, trace scattered microvug porosity in 5%, fair oil odor , no oil droplets
187 u bg
219 show
4350
Cherokee 4356' - 1354'
Limestone- cream off white tan with oil stain scattered Hard dense to brittle in part, very fine to crypto-crystalline grading to very sucrosic with tan stain in 20-30%, trace free soft chlk in part, dull yellow gold fluor scattered in 50%, very poor visible micro pinpoint porosity in 20%, good flush cut to good slow stream cut in 50%, no odor, no droplets
196 u. bg
Straddle
Limestone- cream tan scattered light tan stain in part, hard dense very fine crystalline, dull yellow gold fluor in 10 %, no visible porosity, light flush cut in 20%, poor to fair slow stream cut in 20%, light oil odor
210 u. show
Limestone - cream light green hard dense to brittle, sucrosic matrix with abundant embed clear quartz grains, small medium angular to sub angular grains, laminted and disseminated light green shale thru, no fluor, no visible porosity, no visible cut or show
188 u. bg
cfs @ 4402'
4400
Limestone-off white cream tan- hard dense in part fine crystalline, re-crystalline with medium calcite crystals embed in part and abundant free soft white chalk, very dull yellow mineral fluor in part to no fluor, no visible porosity, no visible show
0 ROP (Min/Ft) 10
1 Gamma (API) 150
6 Caliper (inches) 16
0 TG, C1-C5 400
Bit #3
7 7/8
St
MS 1516
JN 6941
jets 3-14's
in at 4402'
pdc
Shales and silts- light green very silty texture, abdundant embed fine clear to angular quartz grains thruout to red very firm blocky smooth to slightly grainy texture in part
Shales and silts- green to reddish brown firm blocky smooth texture in part to very soft gummy in part, heavy trace of silty texture in part
Shales and silts- reddish brown firm blocky smooth texture in part to very soft gummy in part, heavy trace of silty texture
Morgan Ck @ 4402
9:40 am 12/18/21
Vis 62 Wt 9.2
PV 20 YP 22
WL 7.6
Cake 2
PH 10.5
CHL 9500 ppm
CA 10
Sol 6.4
LCM: 4
DMC: $-0-
CMC: $11,267
4450
Sandstone- clear frosty white to greenish in part , fine to medium clear to frosty quartz grains, angular sub angular, siliceous to calcareous cementation, laminated light green shale embed in part, slight trace free soft white chalk in part, no fluor, no visible porosity, novisible show or cut



Shales and silts- red very silty texture, abdundant embed fine clear quartz grains thruout to reddish green very firm blocky smooth to slightly grainy texture in part

Shales- red green mustard yellow purplke mottled- firm blocky smooth texrture to splinty in part

76 u. bg

Sandstone-clear frosty white reddish- medium large to pebble sized quartz grains, angular sub angular to sub round very poor sort, clear to red grains abundant free grains in tray laminated red shale in part, no fluorescence,good visible pososity in part, no visible cut

Limestone- light tan dark gray in part, hard dense, very fine to crypto-crystalline with laminated dark gray shale in part, no fluor, no visible porosity, no visible show or cut

90 u. bg

Shale - dark brown green firm blocky smooth waxy texture in part to blocky grainy texture in part

113 u. ?

Sandstone- clear frosty grains, abundant free small medium to pebble sized angular sub angular sub round clear grains laminated gray shale in part, with traces of disseminated pyrite in part, poor sort, no visible porosity, no visible show or cut

Mississippi 4568' - 1566'

Limestone- off white white to cream, hard dense fine crystaline to very sucrosic sub chalky, abundant free soft white chalk ,tan white mottled chert, no fluorescence , no visible cut or show

100 u. bg

Limestone- white off white to cream hard in part to medium hard , very firm chalky matrix to abundant soft white chalk, fine crystaline re-crystaline in part, abundant translucent white tan re worked chert, dull yellow fluorescence, no visible porosity, no show

80 u. bg

Limestone- white off white to cream hard in part very firm chalky matrix to abundant soft white chalk, medium crystaline re-crystaline in part, abundant white tan weathered chert, dull yellow fluorescence, no visible porosity, no show

No samples / No bottoms up

no bottoms up gas

RTD @4670' at 10:49 PM Dec 18th 2021

Short trip

CTCH 1 Hour

Trip out for logs